

# Saving Lives and Preventing Injuries

Data overview of drownings, motor vehicle crashes,  
and falls in Hawaii

*Dan Galanis, Ph.D.*

*Injury Prevention and Control Program*

*Hawaii Department of Health*

*1250 Punchbowl St., Room 214*

*Honolulu, HI 96813*

*Ph: 586-5943*

*E-mail: [daniel.galanis@doh.hawaii.gov](mailto:daniel.galanis@doh.hawaii.gov)*

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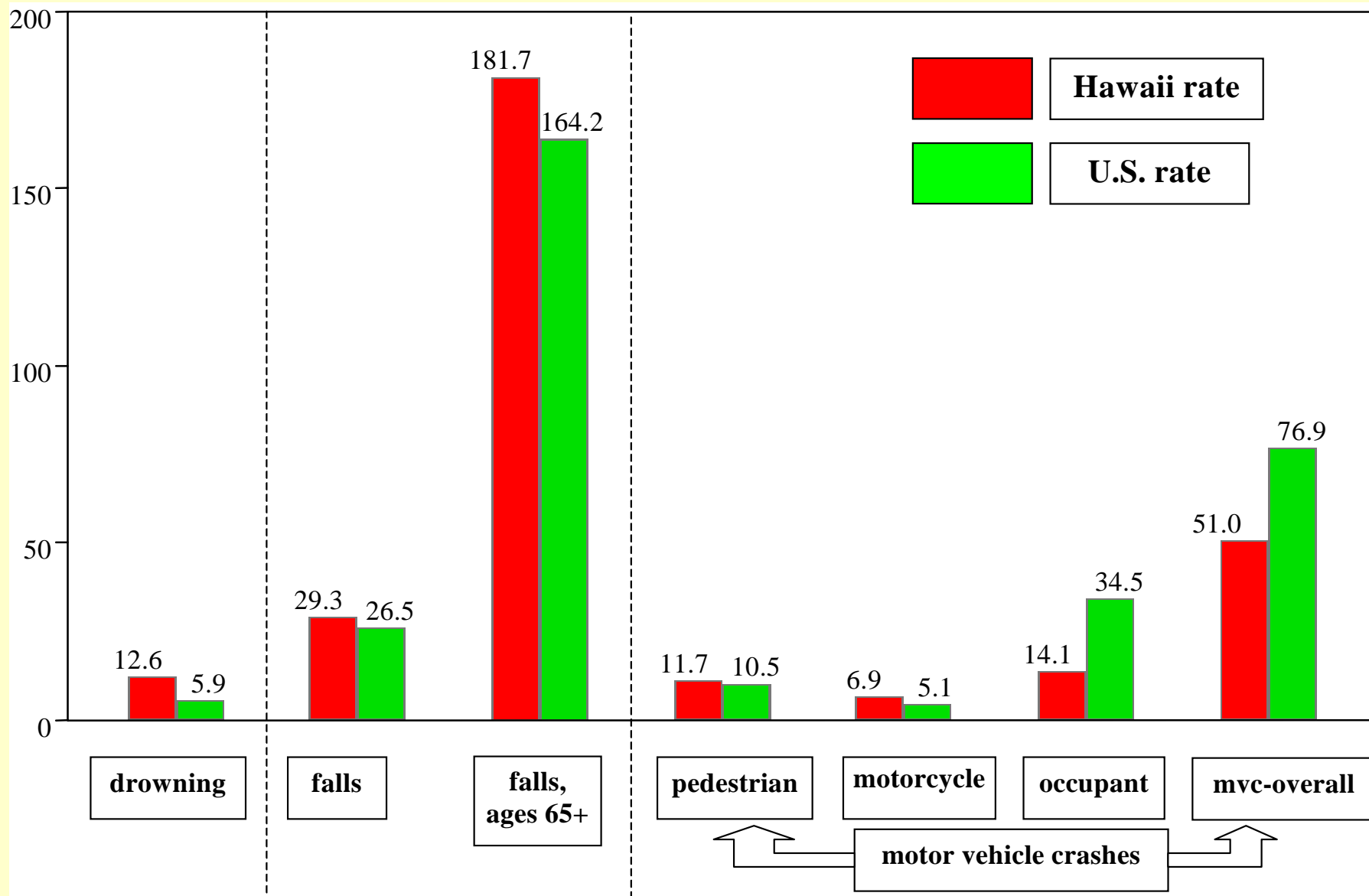
## Overview of presentation

- **The 3 injury areas in context**
  - *Comparisons w/ rest of U.S. (1999-2003)*
- **Drownings**
  - *Ocean drownings: trends, geography, and medical factors*
- **Falls among seniors (ages 65 and older)**
- **Motor vehicle crashes**
  - *Trends, geography*
  - *Description by type: occupants, motorcyclists, pedestrians, and bicyclists*
    - *FARS data—risk factors*
  - *Legislative success stories—prevention works!*

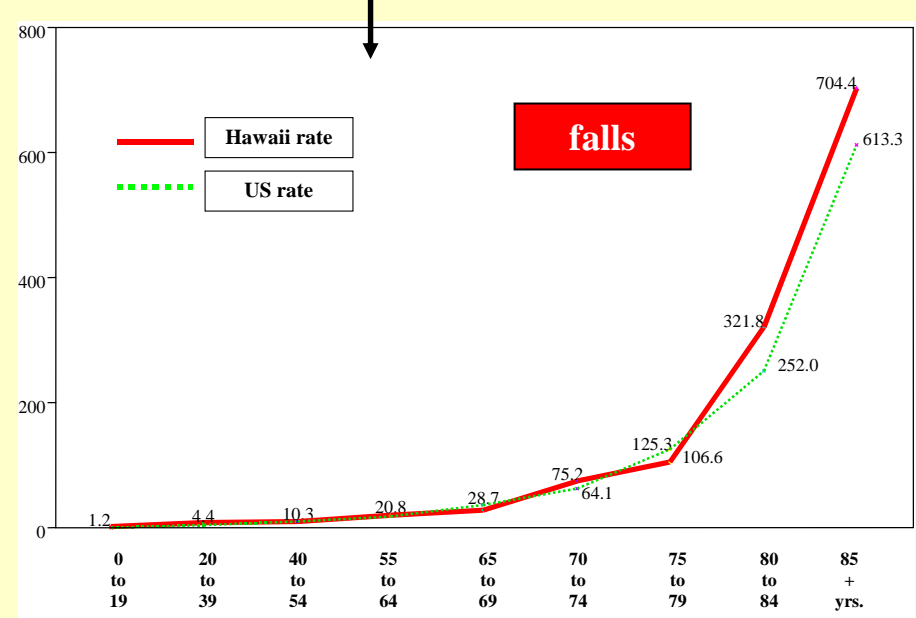
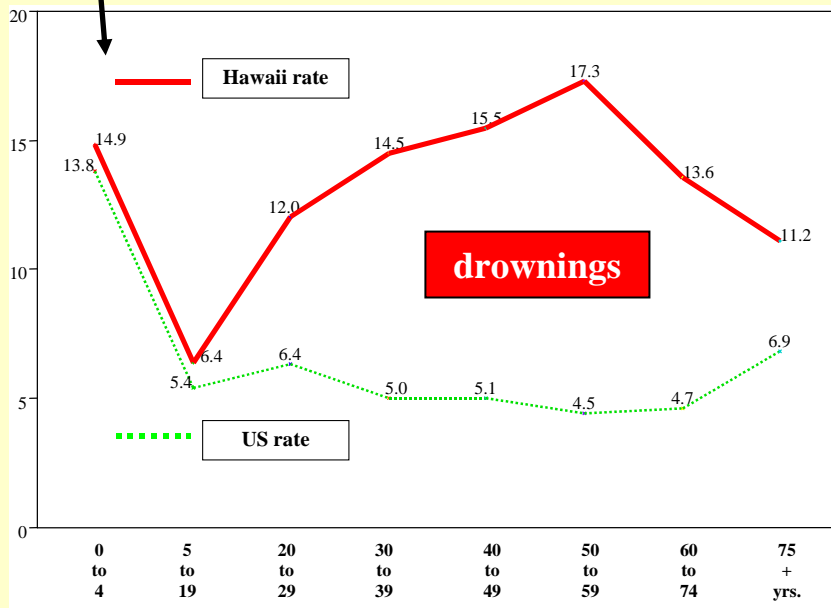
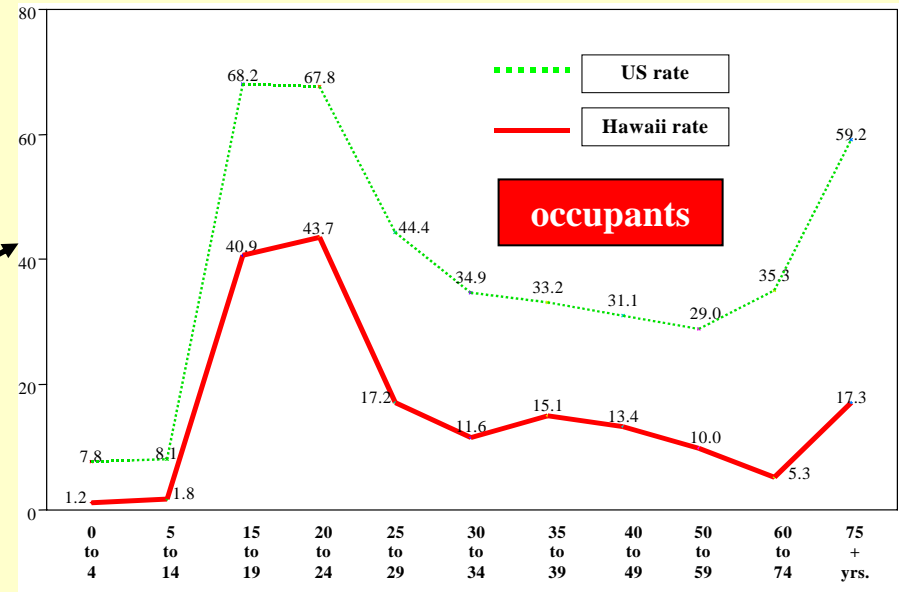
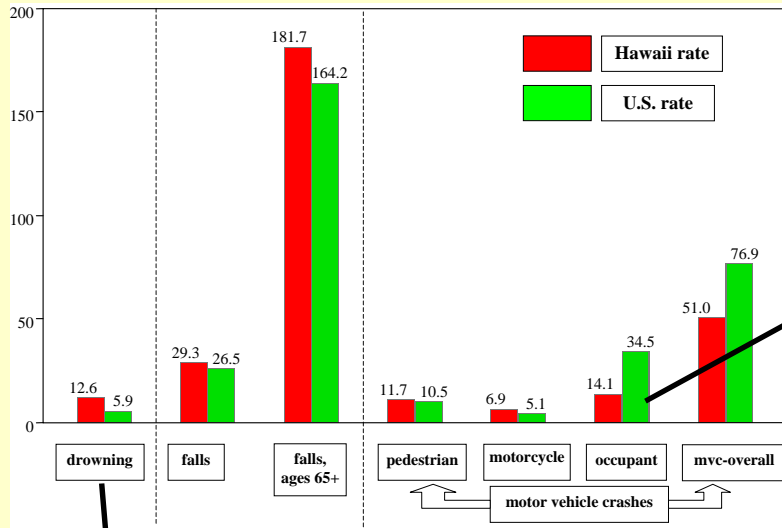
# Leading causes of injury mortality and morbidity among Hawaii residents, 2001-2005.

	Fatal injuries (2001-2005)			Hospitalizations (2003-2005, non-fatal injuries)			Emergency Dept. Visits (2003-2005 non-fatal injuries)		
	<i>cause</i>	<i>#/yr.</i>	<i>%</i>	<i>cause</i>	<i>#/yr.</i>	<i>%</i>	<i>cause</i>	<i>#/yr.</i>	<i>%</i>
<b>1</b>	<b>motor vehicle crash</b>	<b>137</b>	<b>23%</b>	<b>falls (&gt;65 years)</b>	<b>2,581</b>	<b>29%</b>	falls (<65 years)	13,690	19%
<b>2</b>	suicide	120	21%	<b>motor vehicle crash</b>	<b>1,587</b>	<b>18%</b>	striking	10,856	15%
<b>3</b>	<b>falls (&gt;65 years)</b>	<b>62</b>	<b>11%</b>	falls (<65 years)	1,248	14%	<b>motor vehicle crash</b>	<b>9,821</b>	<b>14%</b>
<b>4</b>	poisoning	61	10%	suicide	786	9%	cut/pierce	7,965	11%
<b>5</b>	<b>drowning</b>	<b>32</b>	<b>6%</b>	assault	421	5%	overexertion	5,683	8%
	(incl. non-residents)	63					<b>6<sup>th</sup>: falls (&gt;65 years)</b>	<b>4,548</b>	<b>6%</b>

# Fatal injury rates (/100,000): Hawaii vs. rest of U.S., 1999-2003.



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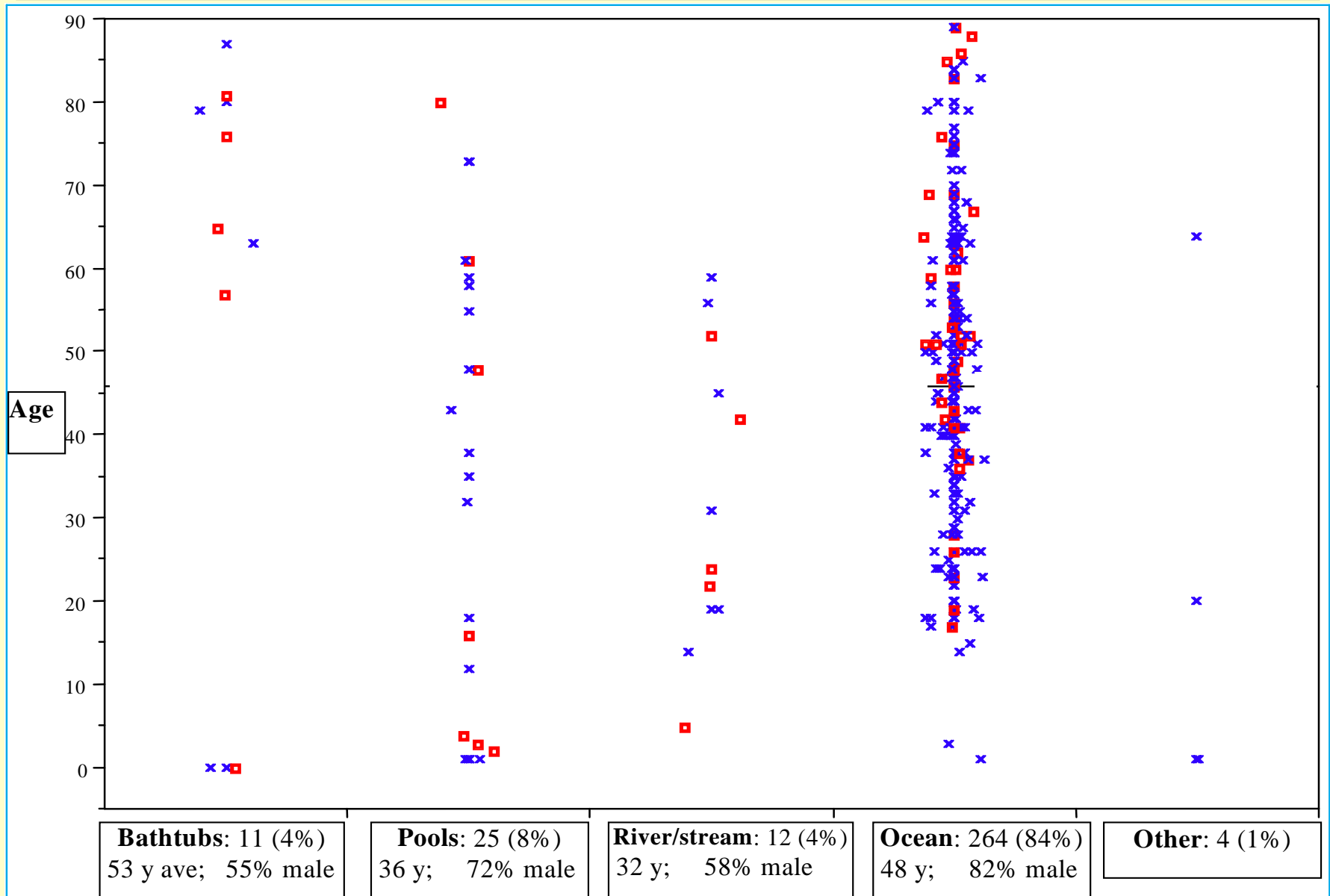


# Drownings

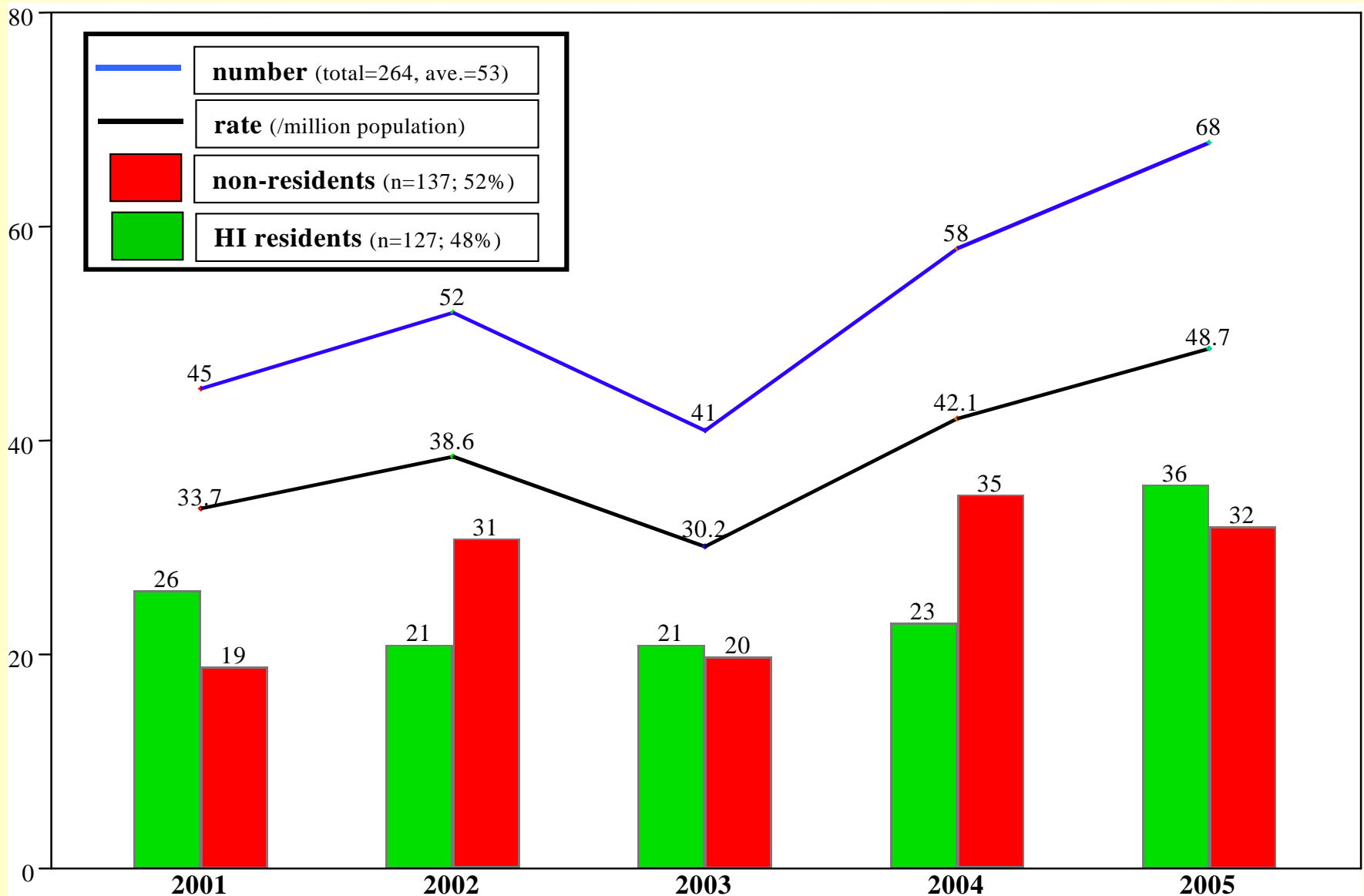
## (Excluding the Ehime Maru incident)

- **Hawaii has the 2<sup>nd</sup> highest rate in U.S. (residents only)**
  - *Probably highest in the nation if non-residents are included (157 over 5 years)*
    - *Leading cause of fatal injuries among non-residents (45%)*
- **Most commonly (84%) drownings in the ocean**
  - *Increasing trend*
  - *52% among non-residents*
  - *Highest rates on Neighbor Islands, particularly Kauai and Hawaii*
- **Annual numbers (including non-residents):**
  - *63 deaths*
  - *172 hospitalizations*
  - *630 ED visits*
    - *Near-drownings events tend to be among younger victims (50% were 35 or younger)*
    - *Majority (62%) non-residents*

# Drownings in Hawaii, by environment, age and gender, 2001-2005.

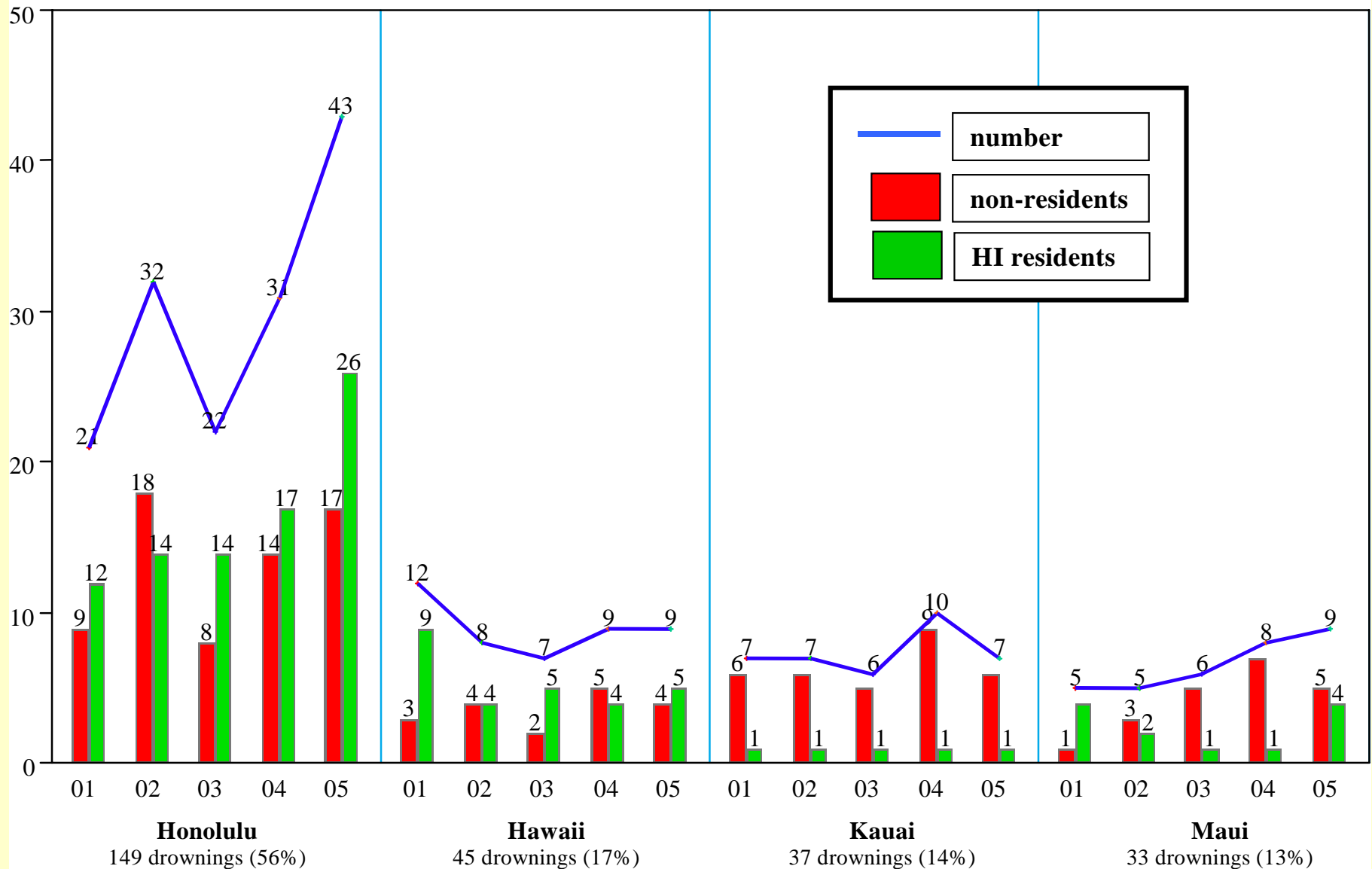


# Annual number and rate of ocean drownings in Hawaii, 2001-2005.

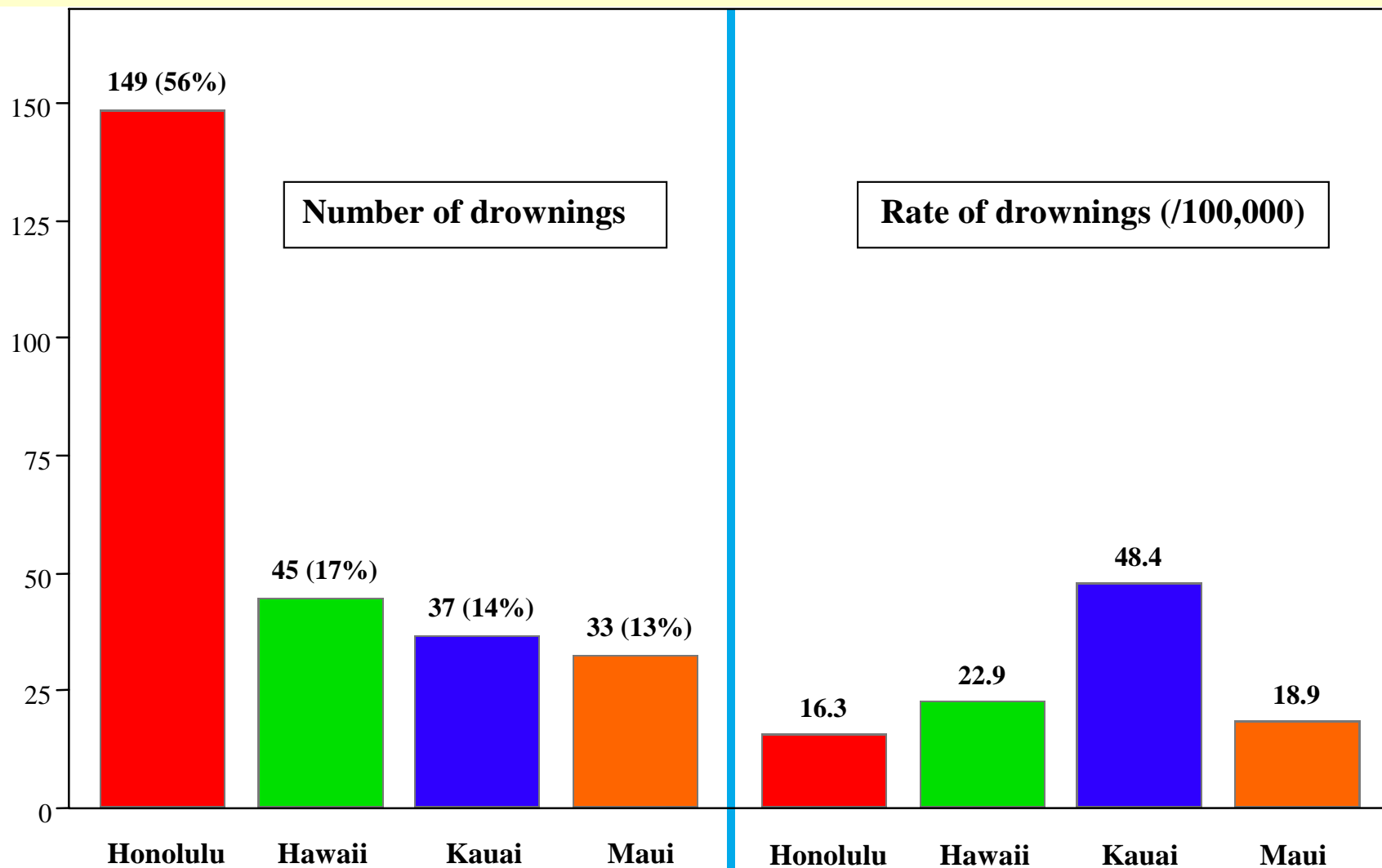




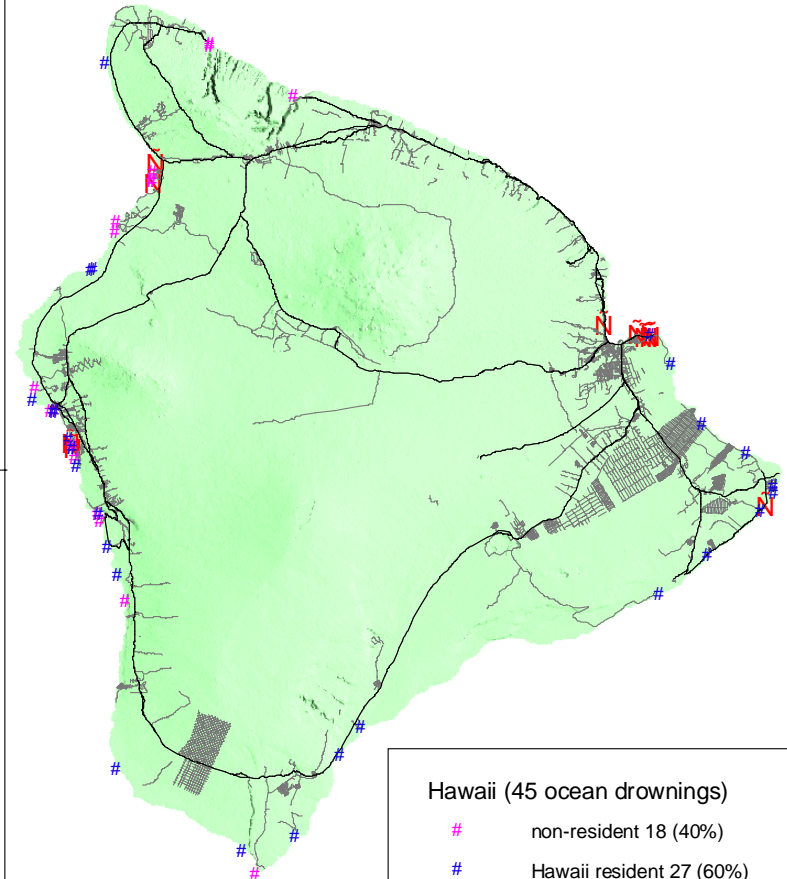
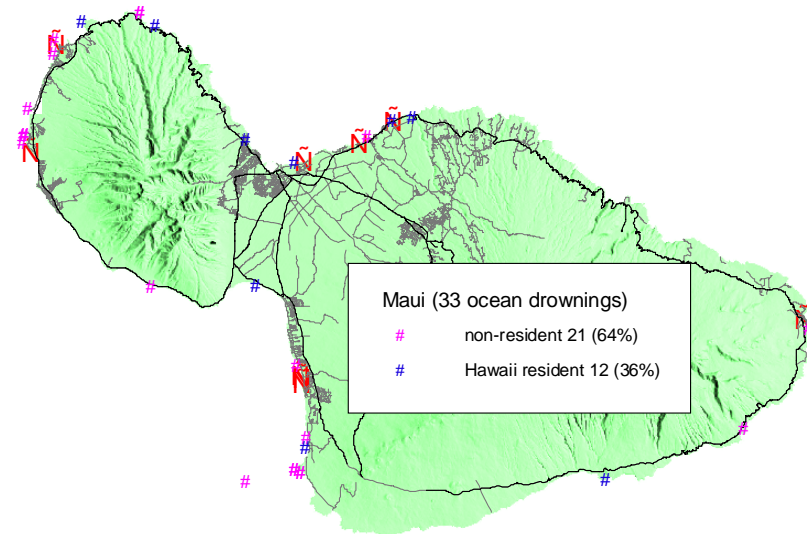
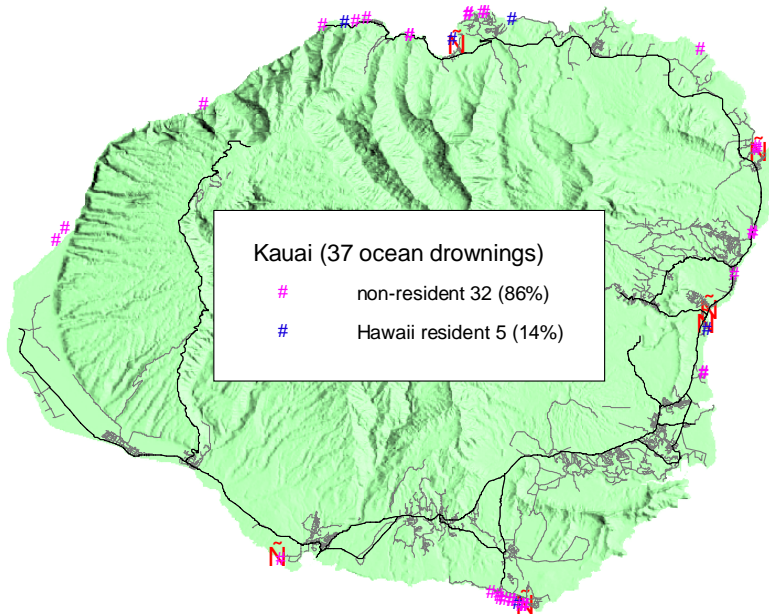
# Annual number of ocean drownings in Hawaii, by county, 2001-2005.



# Number and rate of ocean drownings in Hawaii, by county, 2001-2005.



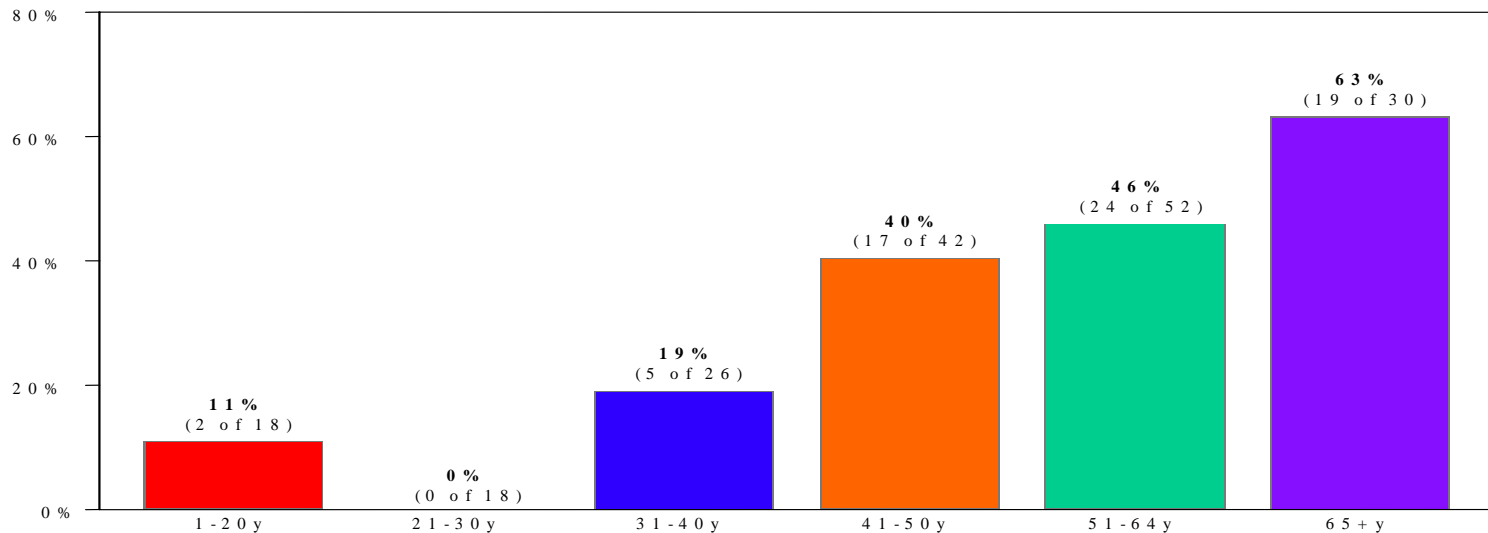
# Locations of ocean drownings, by residence status, 2001-2005.



**N** Lifeguarded beach

# Medical and toxicological factors of ocean drownings, 2001-2004.

- **Circulatory diseases (mostly heart disease, incl. cardiomegaly):**
  - *Prevalent in over one-third (36%) of victims, but increases across age range:*



- **Alcohol use:**
  - 13% had BAC  $\geq 0.02$ , and 5% had BAC  $\geq 0.15$ 
    - Wide age range (19 to 66 years)
- **Drug use:**
  - Positive drug screen for 16%, but mostly THC (12%)
    - Drugs mentioned as contributing cause in 3% of drownings
- **Seizure disorders:**
  - Only 4 victims (2%)—ages 15 to 48 years
- **Traumatic injuries:**
  - Only 6 victims (3%)—mostly cervical fx related to falls

## Summary:

About **half (46%)**  
had intrinsic factors

## **Data summary for drownings**

**Who?** Mostly (80%) males  
Half locals, half non-residents (visitors)  
Wide age range, but few (3%) ocean drownings under 18

**Where?** Mostly (84%) in the ocean  
Generally higher rates on Neighbor Islands, esp Kauai

**When?** Mostly daylight; 52% between 10:30am and 3:30pm  
Little seasonality throughout the year

**Why?** Intrinsic factors play a role  
heart disease: 36% overall, a majority of seniors  
alcohol and drug use, seizures less prevalent (5%-2%)

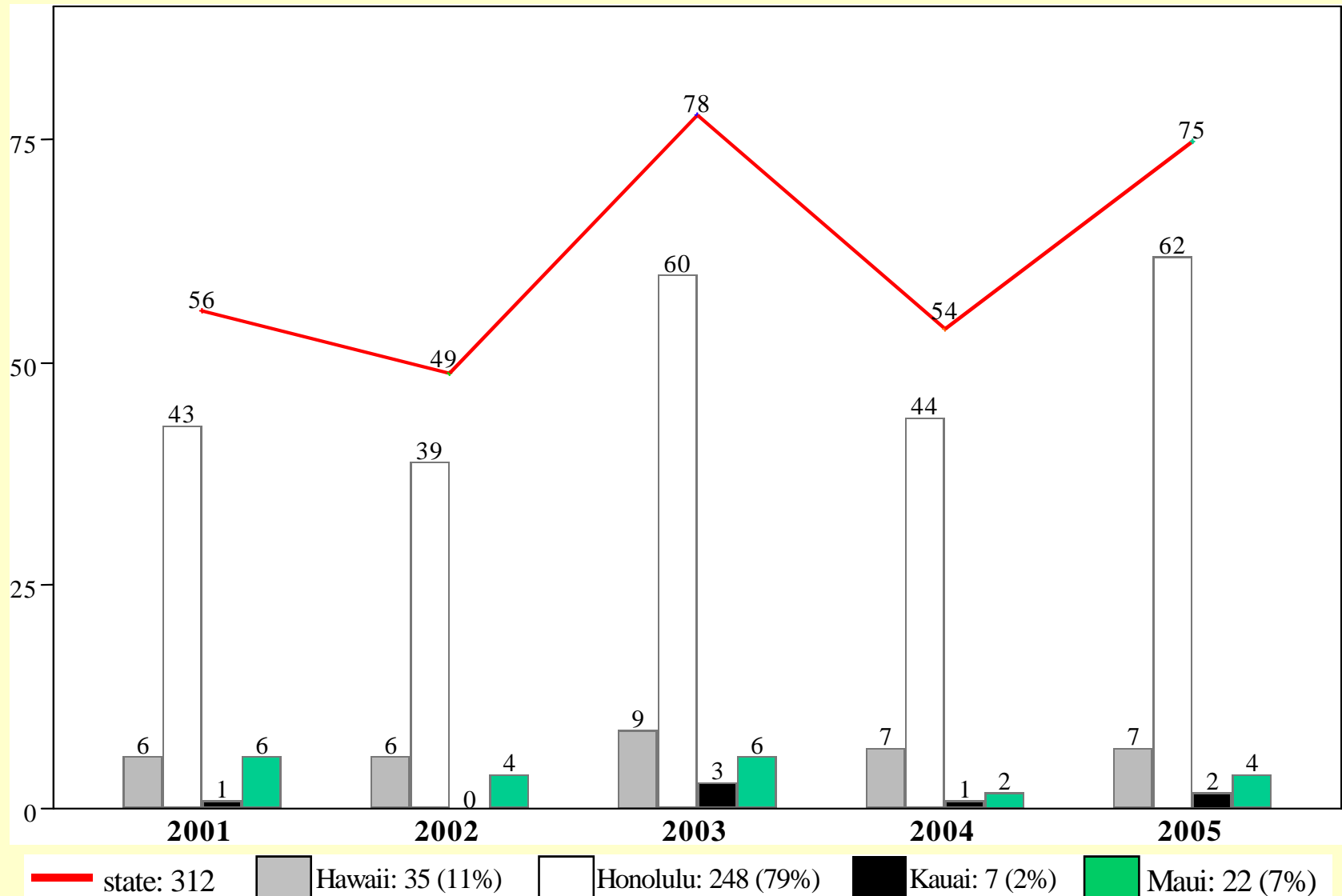
# **Falls among seniors (ages 65 and older)**

# Importance of fall prevention:

## *Falls among seniors are...*

- The **3<sup>rd</sup> leading** cause of fatal injuries for residents of all ages: 62/yr. (11%)
  - The **leading** cause of fatal injuries among seniors (37%)
- The **leading** cause of injury-related hospitalizations for all ages: 2,581/yr. (29%)
  - The **leading** cause of injury hospitalizations among seniors (79%)
    - Motor vehicle occupant next at 4%
- The **6<sup>th</sup> leading** cause of injury-related ED visits for all ages: 4,548/yr. (6%)
  - The **leading** cause of injury ED visits among seniors (58%)
- The **2<sup>nd</sup> leading** cause of Traumatic Brain Injury for all ages: 1107/yr. (17%)
  - The **leading** cause of TBI among seniors (83%)

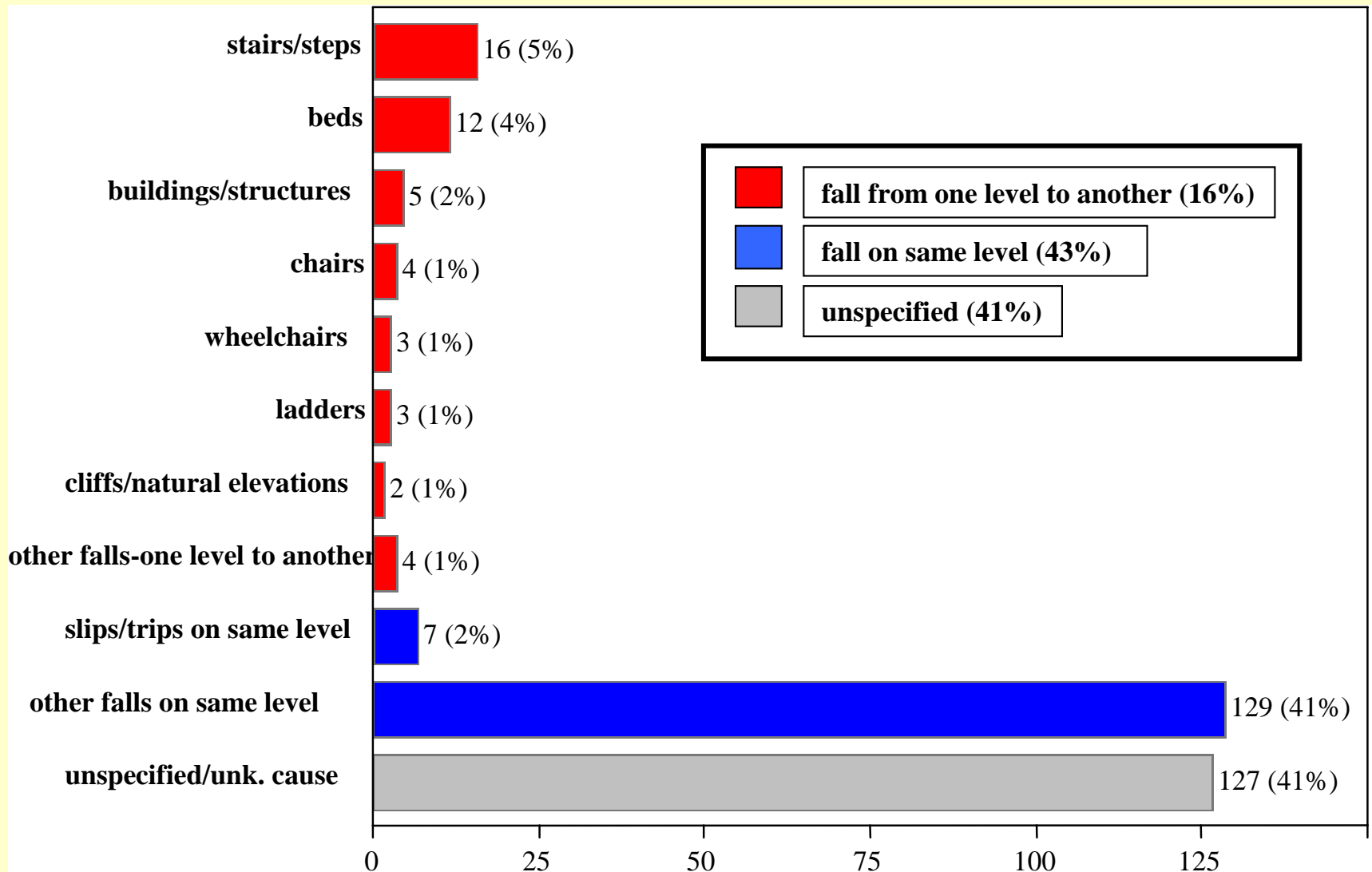
# Annual number of fatal falls among senior residents of Hawaii, by county, 2001-2005



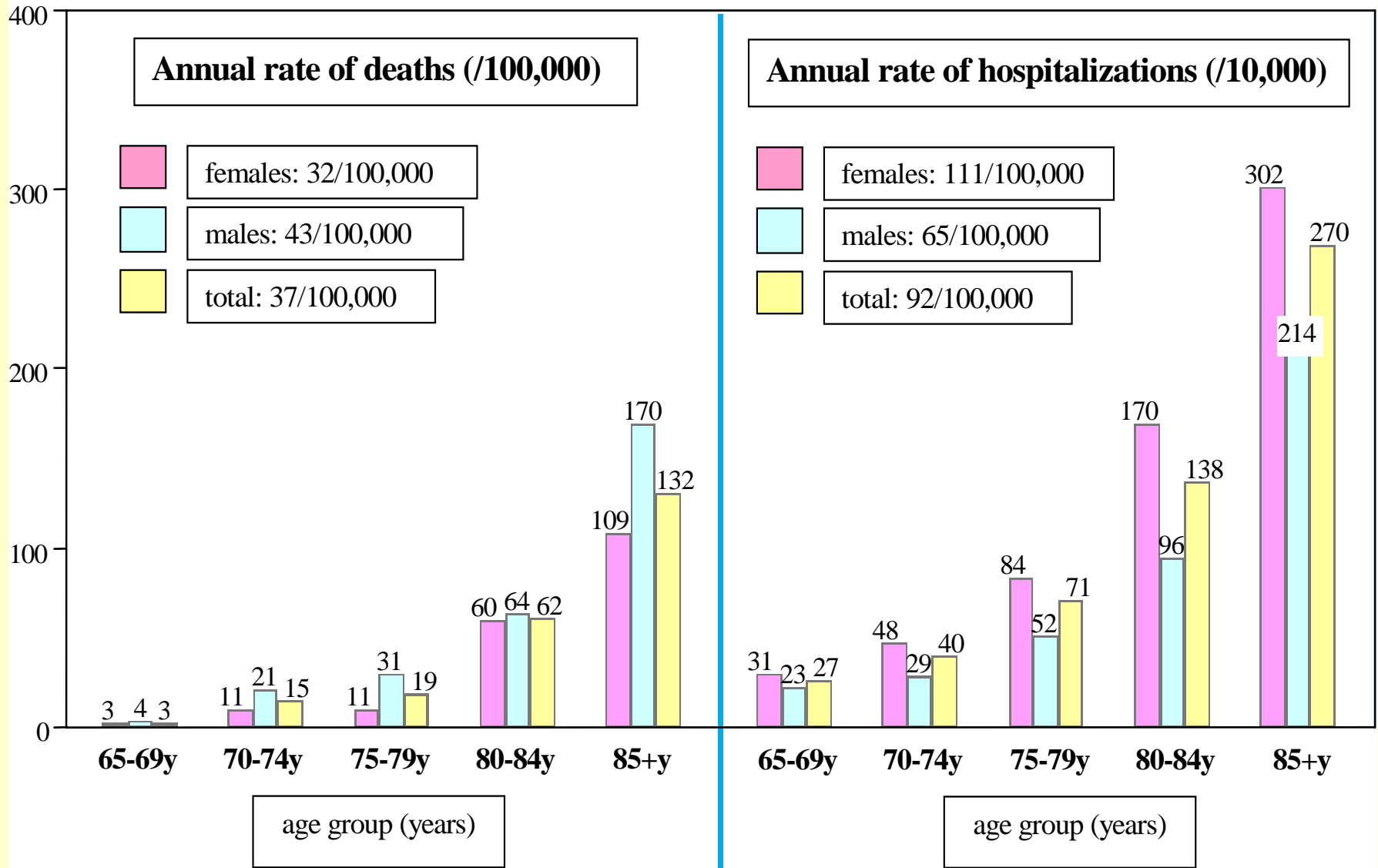


# Causes of fatal falls among seniors in Hawaii, 2000-2004:

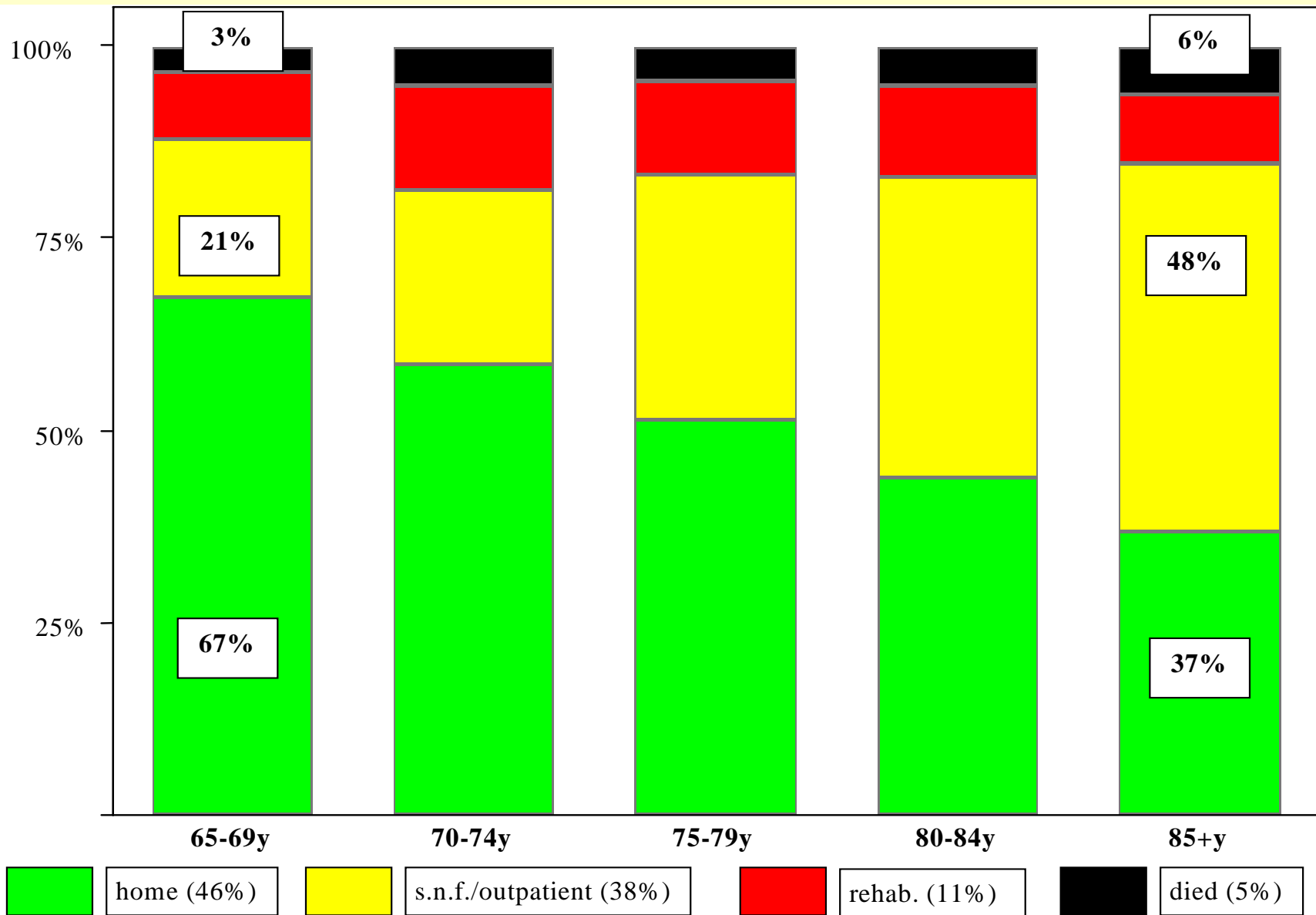
Limitations of data from death certificates.



# Rates of fatal falls (left) and falls requiring hospitalizations (right) among senior residents in Hawaii, by age group and gender.



## Disposition of senior residents hospitalized for falls in Hawaii, by age group, 2003-2005.

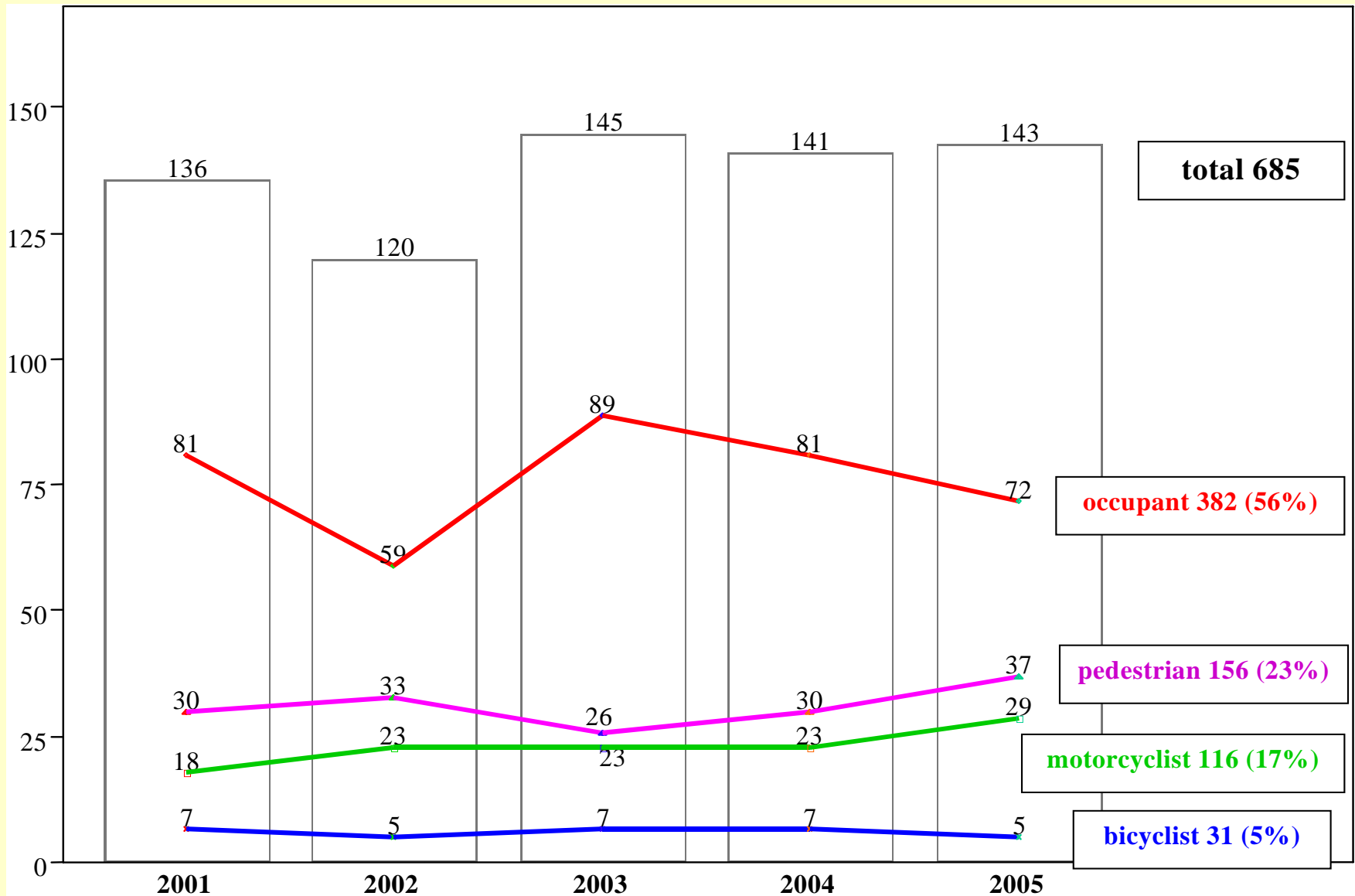


## **Data summary for falls**

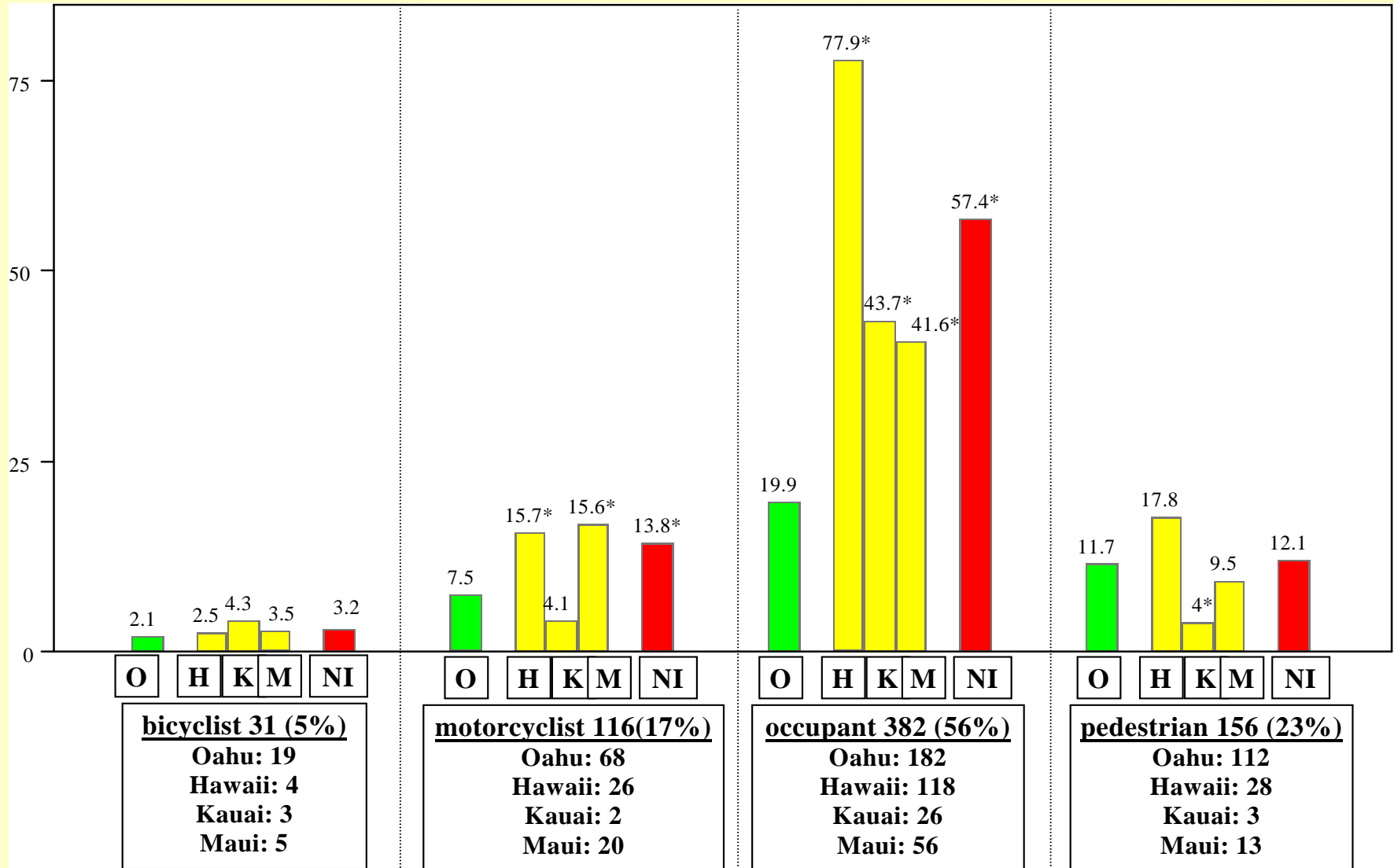
- Who?** Risk increases strongly with age  
Men have higher death rates, but women have higher rates of hospitalizations
- Where?** Fatality rates significantly higher (29%) for Oahu compared to Neighbor Islands as a whole
- When?** Mostly daylight hours; esp. mid-day
- Why?** Poor information for fatalities and hospitalizations.  
Most likely multi-factorial causes;  
importance of intrinsic and extrinsic factors

# **Motor vehicle crashes**

# Annual number of Hawaii residents killed in motor vehicle crashes, by type of crash, 2001-2005.



# Motor vehicle crash fatality rates among Hawaii residents, by county and type of crash, 2001-2005.



\*denotes significantly different 5-year fatality rate from Oahu

**North Kohala (6)**

**South Kohala (17)**

**North Kona (55)**

**South Kona (7)**

**Hamakua (10)**

**North Hilo (6)**

**South Hilo (28)**

**Kau (11)**

**Puna (36)**

Number killed in motor vehicle crashes



lowest (0 - 3 deaths)



low (4 - 6 deaths)



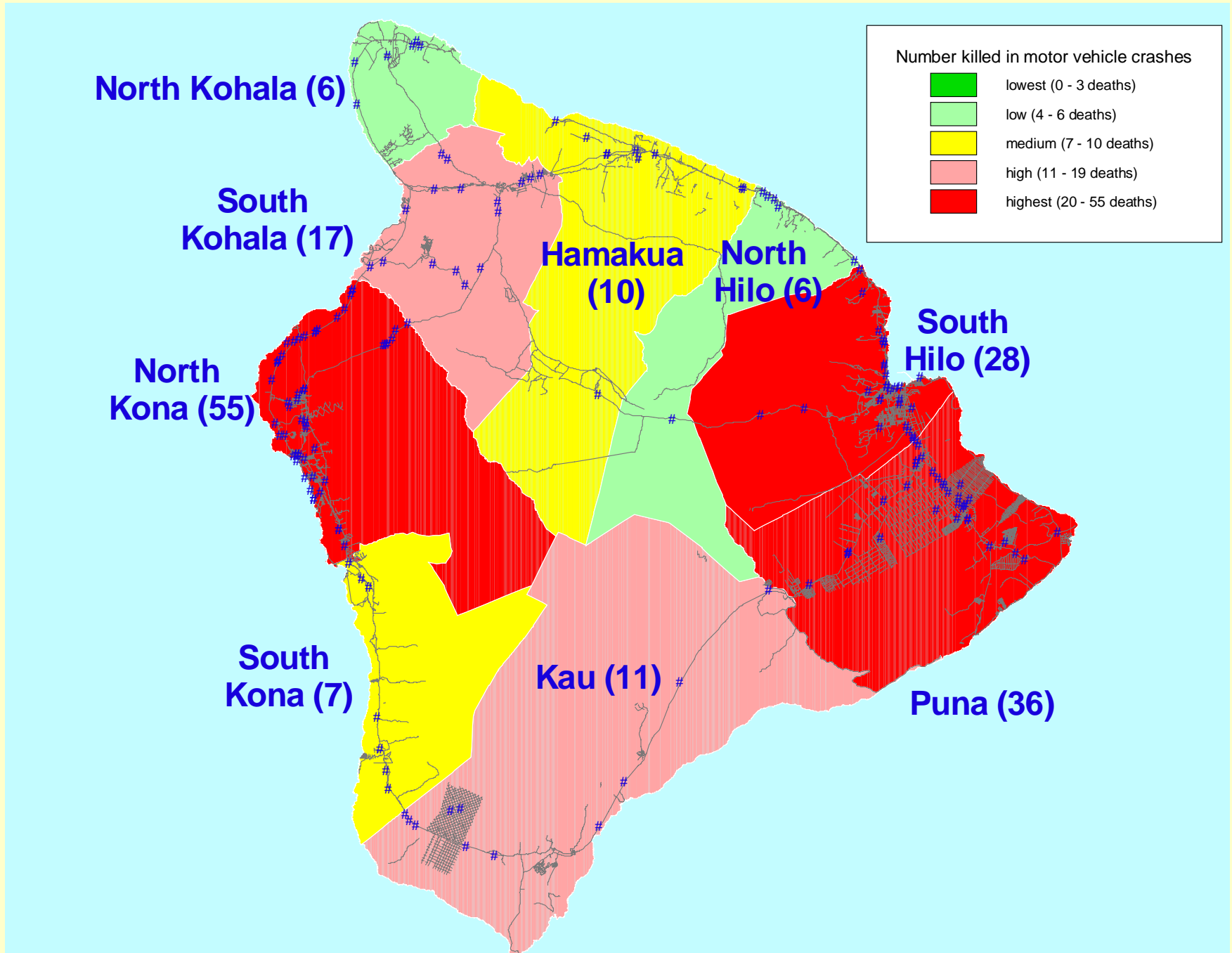
medium (7 - 10 deaths)



high (11 - 19 deaths)

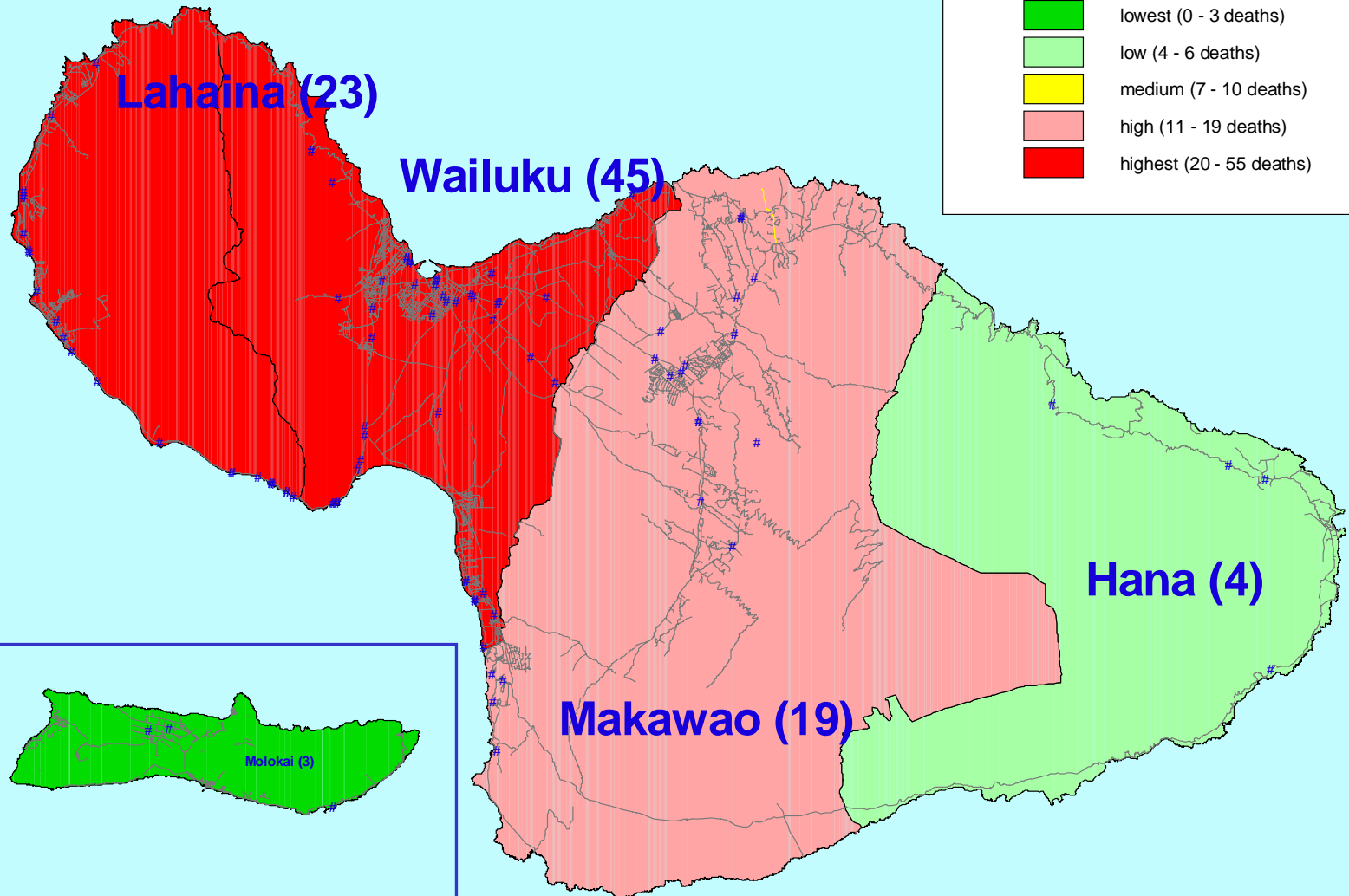
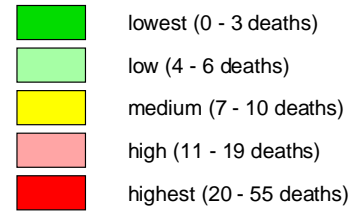


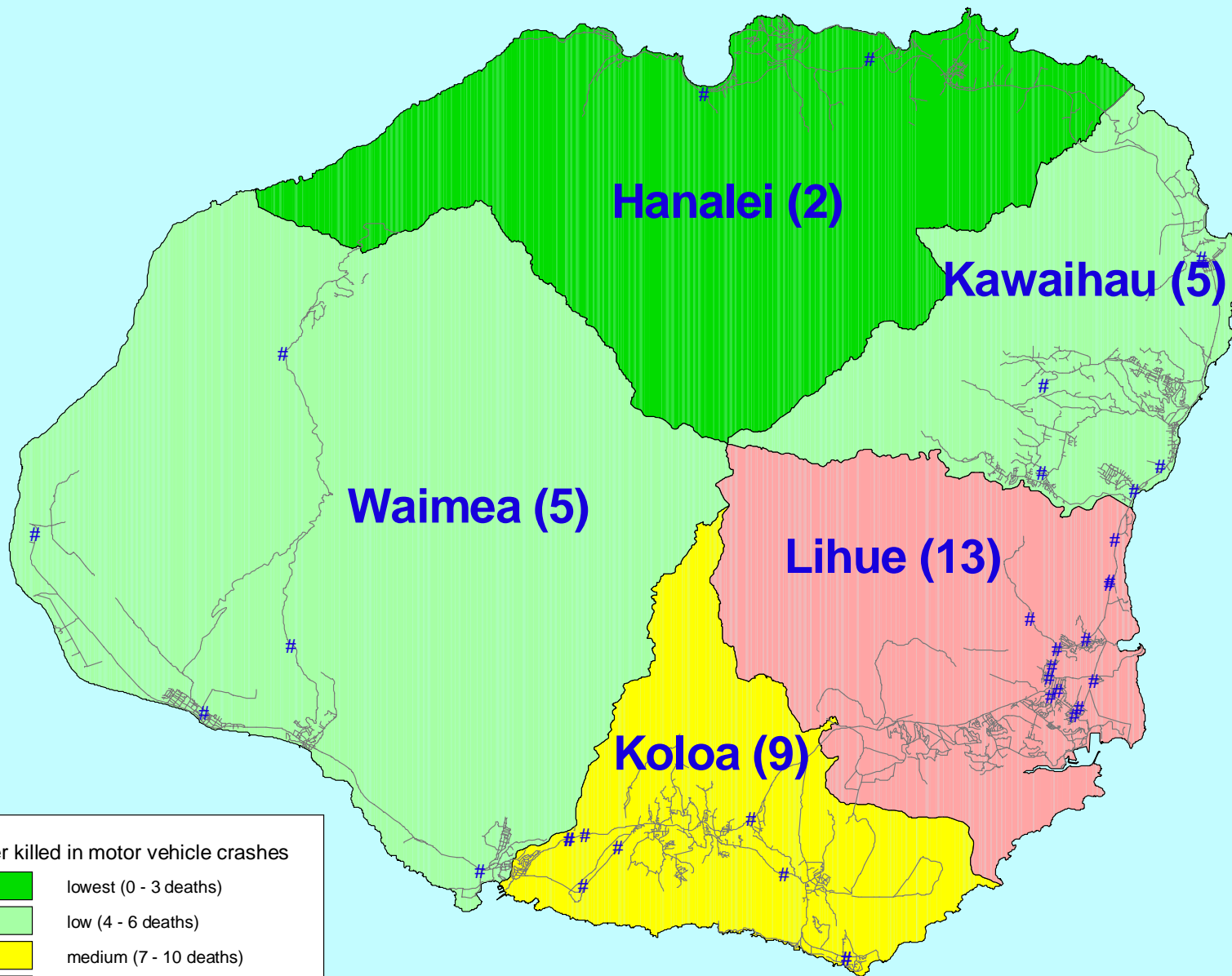
highest (20 - 55 deaths)



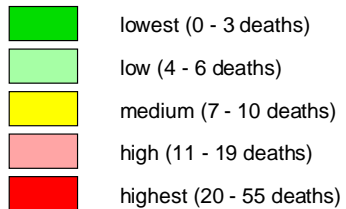


Number killed in motor vehicle crashes





Number killed in motor vehicle crashes



## **RISK FACTORS from FARS, 2001-2005**

**for fatally injured *occupants* (351 of 382; 92%)**

- **Alcohol**
  - *Involved in half (51%) of the 307 fatal crashes (unk. for 9%)*
    - *50% of fatally injured drivers; 43%  $\geq 0.08$  BAC*
      - *67% of drivers killed during nighttime*
      - *59% of drivers killed during Saturday or Sunday*
- **Restraint use**
  - *Most victims (56%) not restrained (unk. for 11%)*
    - *Lower among backseat passengers (89%)*
- **Other factors**
  - *Speeding involved in 56% of crashes (68% on Oahu)*
  - *More than half (54%) were single-car crashes*

# **RISK FACTORS from FARS, 2001-2005**

## **for fatally injured *motorcyclists* (107 of 116; 92%)**

- **Alcohol**
  - *Involved in 43% of fatal crashes (unk. for 9%)*
    - *35% of fatally injured drivers; 26%  $\geq 0.08$  BAC*
      - *50% of drivers killed during nighttime*
      - *Increasing proportion over time: 19% in 2001, 43% in 2005*
- **Helmet use**
  - *Only 1 in every 3 victims (31%) wore helmet*
    - *No trends over time or Oahu vs. Neighbor Island differences*
- **Other factors**
  - *Licensing: half (50%) of the drivers had no license (8%) or did not have valid motorcycle operators license (42%)*
  - *Speeding: 37% of fatally injured drivers (47% on Oahu)*
  - *Almost half (47%) did not involve another vehicle*

# **RISK FACTORS from FARS, 2001-2005 for fatally injured bicyclists (25 of 31, or 80%) and pedestrians (137 of 156, or 88%)**

- **Bicyclists**

- *Alcohol: Involved in 22% of deaths (unk. for 8%)*
  - *9% of bicyclists had BAC  $\geq 0.08$  (2 of 23)*
- *Only 2 (8%) were wearing a helmet*

- **Pedestrians**

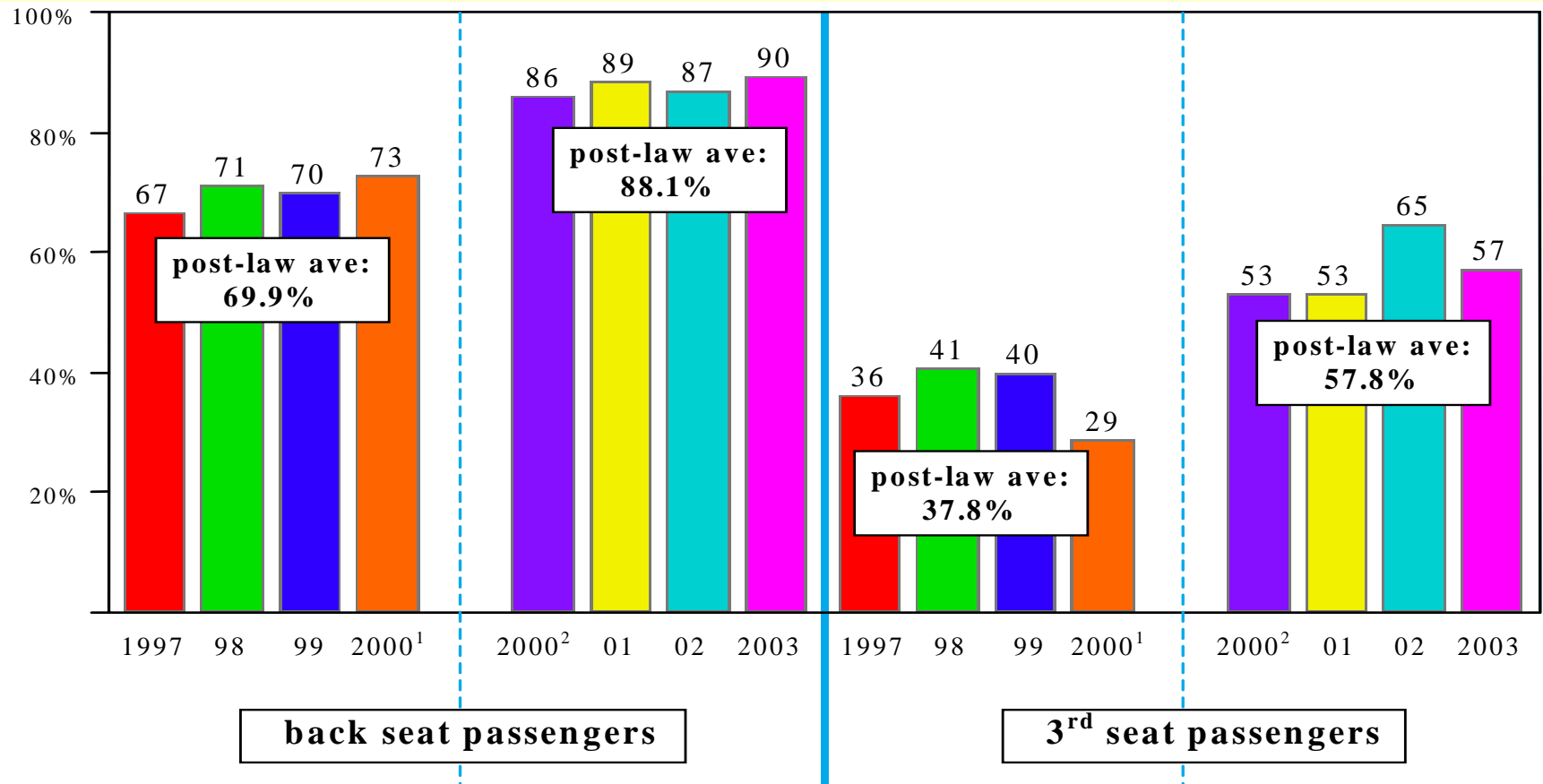
- *Age: almost half (43%) were seniors*
  - *Hawaii had by far the highest pedestrian fatality rate among seniors of any state in the U.S. from 2000-2003*
- *Alcohol:*
  - *Involved in 26% of pedestrian crashes (unk. for 10%)*
    - *Includes 19% of pedestrians (39% for Big Island pedestrians)*
    - *39% of those hit during night time hours*
- **Fault:**
- *53% of pedestrians erroneously in roadway*
  - *Most commonly “improper crossing of roadway or intersection” (37%)*
- *45% of drivers made errors*
  - *Most commonly “inattentive (27%), or “failure to yield right of way” (17%)*

# **Motor vehicle crashes:**

## **Examples of prevention through legislation**

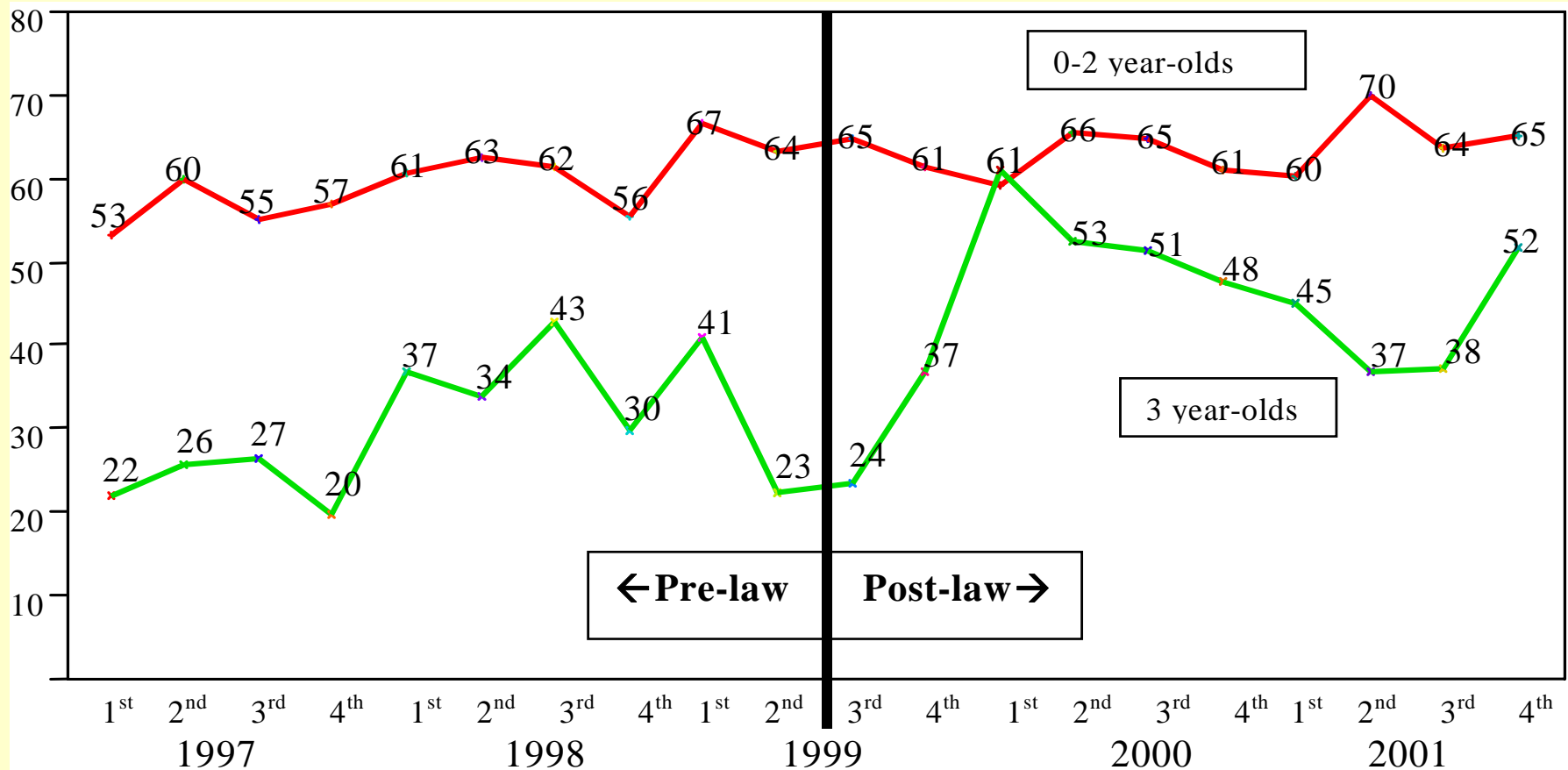
# Evaluation of Act 294, requiring back seat passengers between the ages of 5 and 17 years to be restrained.

**Results:** seat belt use increased 26% among back seat passengers, and 53% among 3<sup>rd</sup> seat passengers involved in major crashes (70 fewer injuries per year)



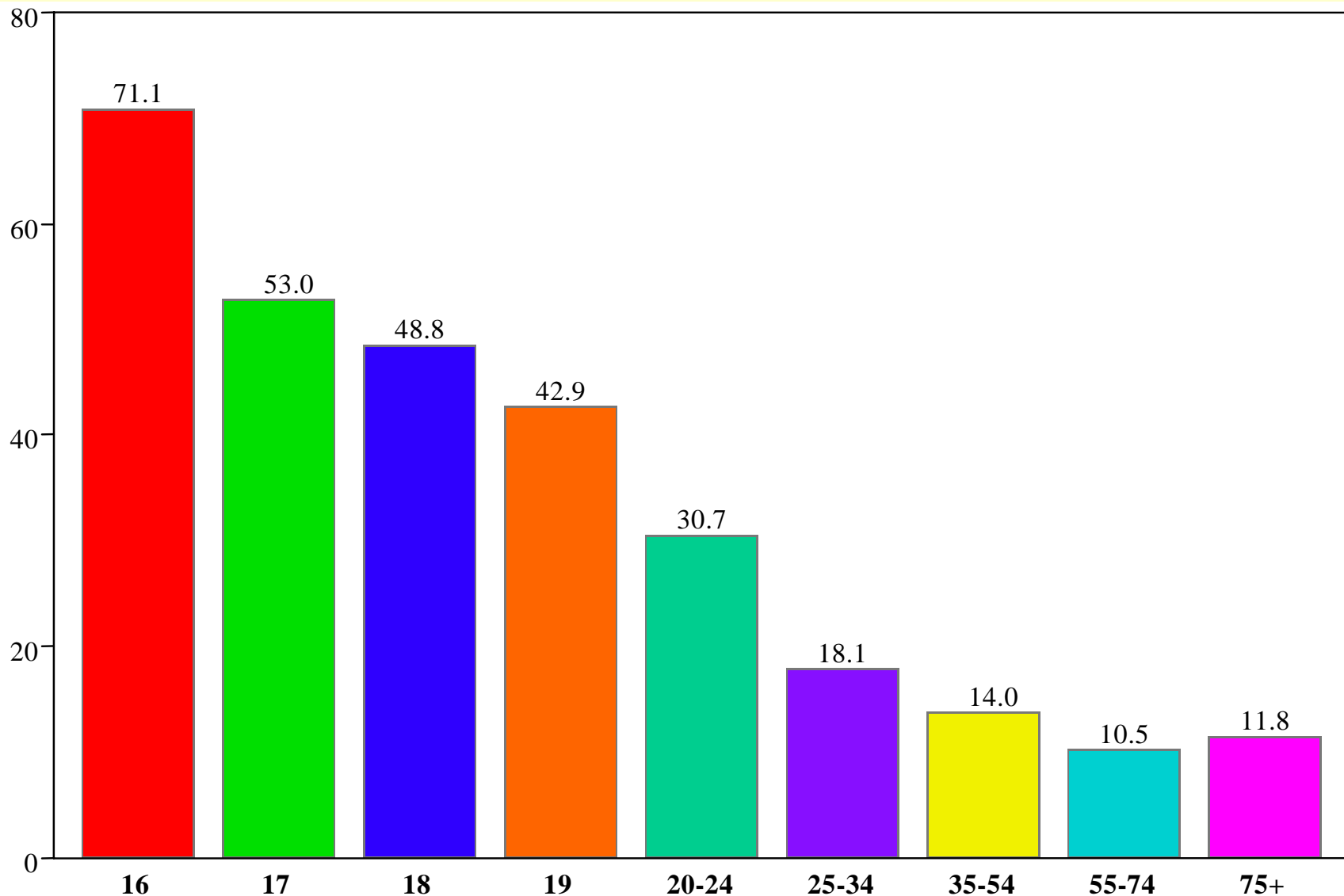
# Evaluation of Act 56, which increased the mandatory car seat age range from 0-2 years to 0-3 years (eff. 7/1999).

**Results:** car seat use increased 53% among 3 year-old passengers who were involved in major crashes (~20 fewer injuries per year)

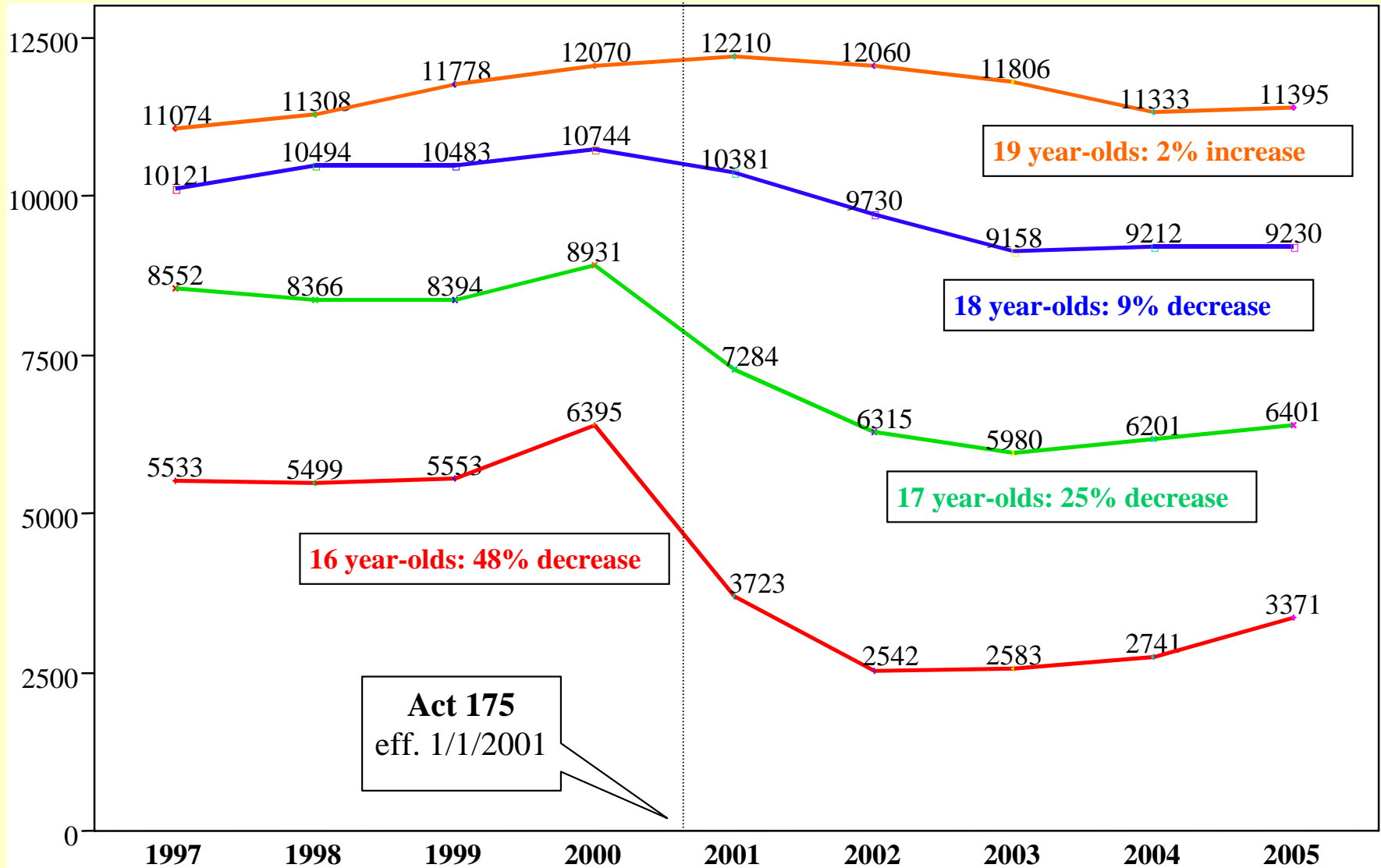




**Annual rate (per 1,000 licensed drivers) of crashes  
in Hawaii, by driver age, 2001-2005.**



# Annual number of teenagers licensed to drive in Hawaii, 1997-2005



# **Data summary for motor vehicle crashes**

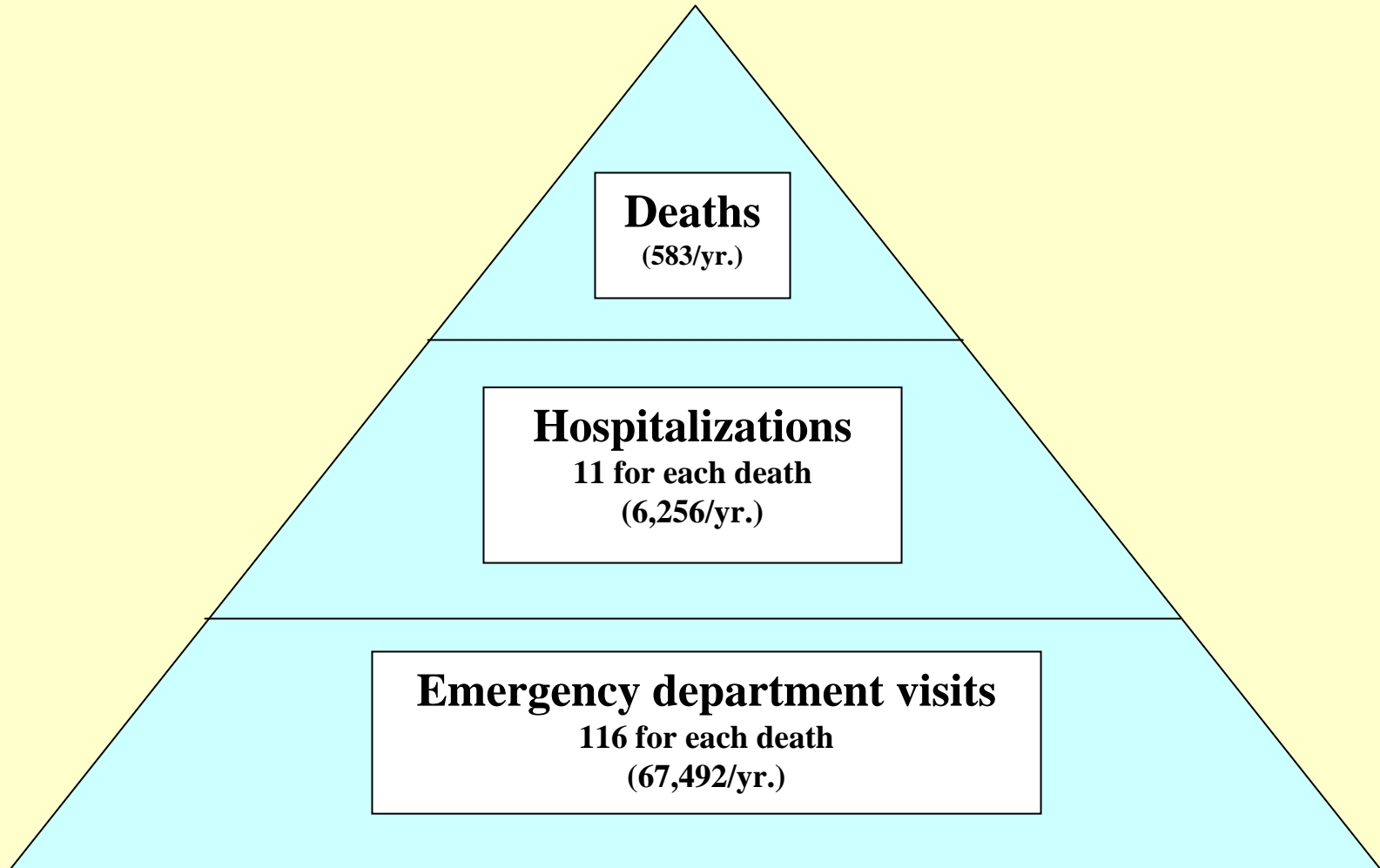
**Who?** Pedestrians: seniors have highest risk of fatal injuries,  
but children higher for non-fatal hospitalizations  
Teen drivers at high risk for crashes, decreases with age

**Where?** Motorcyclist and occupant fatality rates significantly  
higher in Neighbor Islands compared to Oahu,  
especially for Hawaii County (4 times higher)

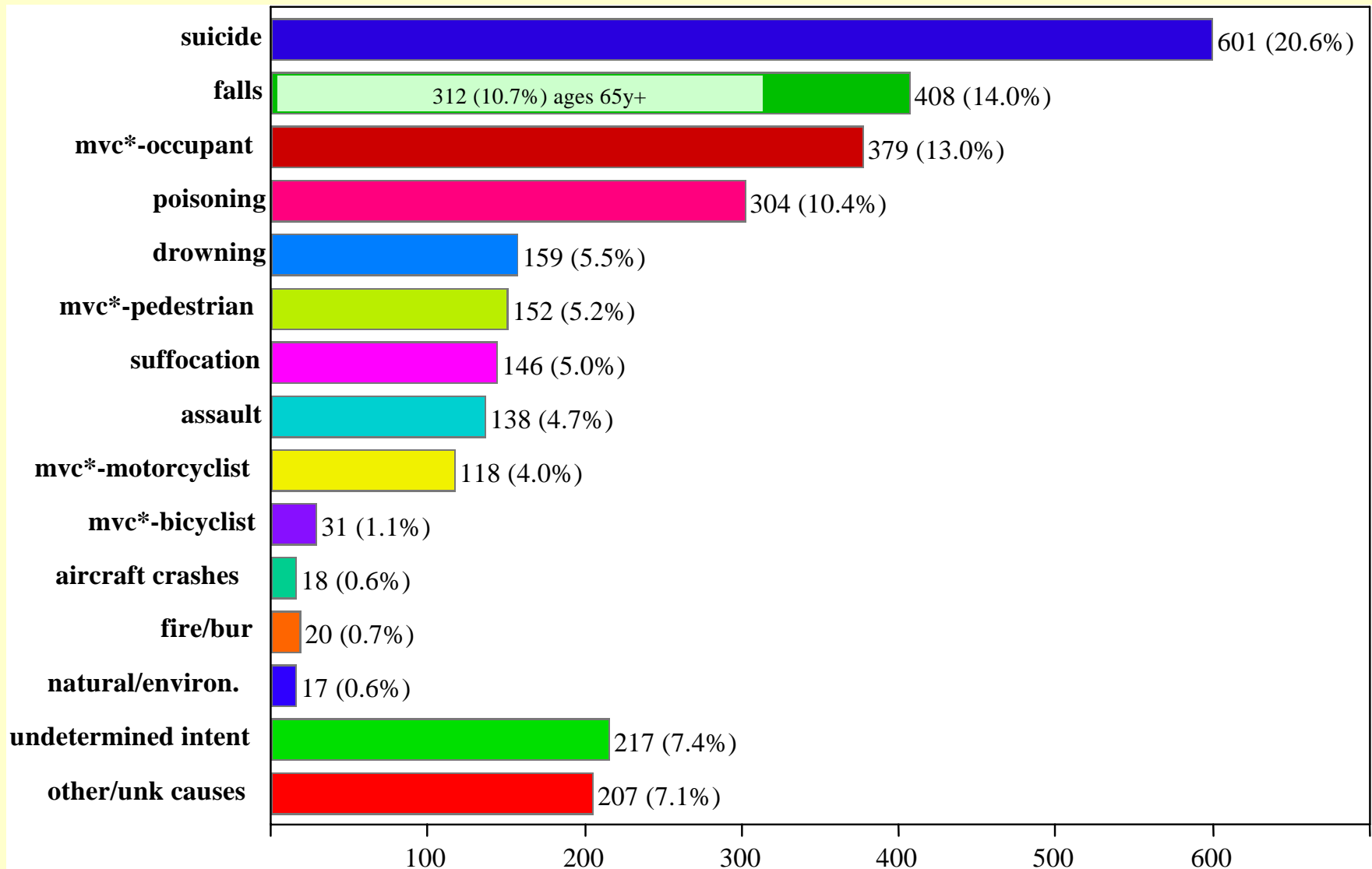
**Why?** Lack of restraint use for occupants, helmets for  
motorcyclists and bicyclists  
Involvement of alcohol  
Single vehicle crashes  
Equal fault of pedestrians and motorists?



# The “injury pyramid” for Hawaii residents



# Causes of fatal injuries among Hawaii residents, 2001-2005.



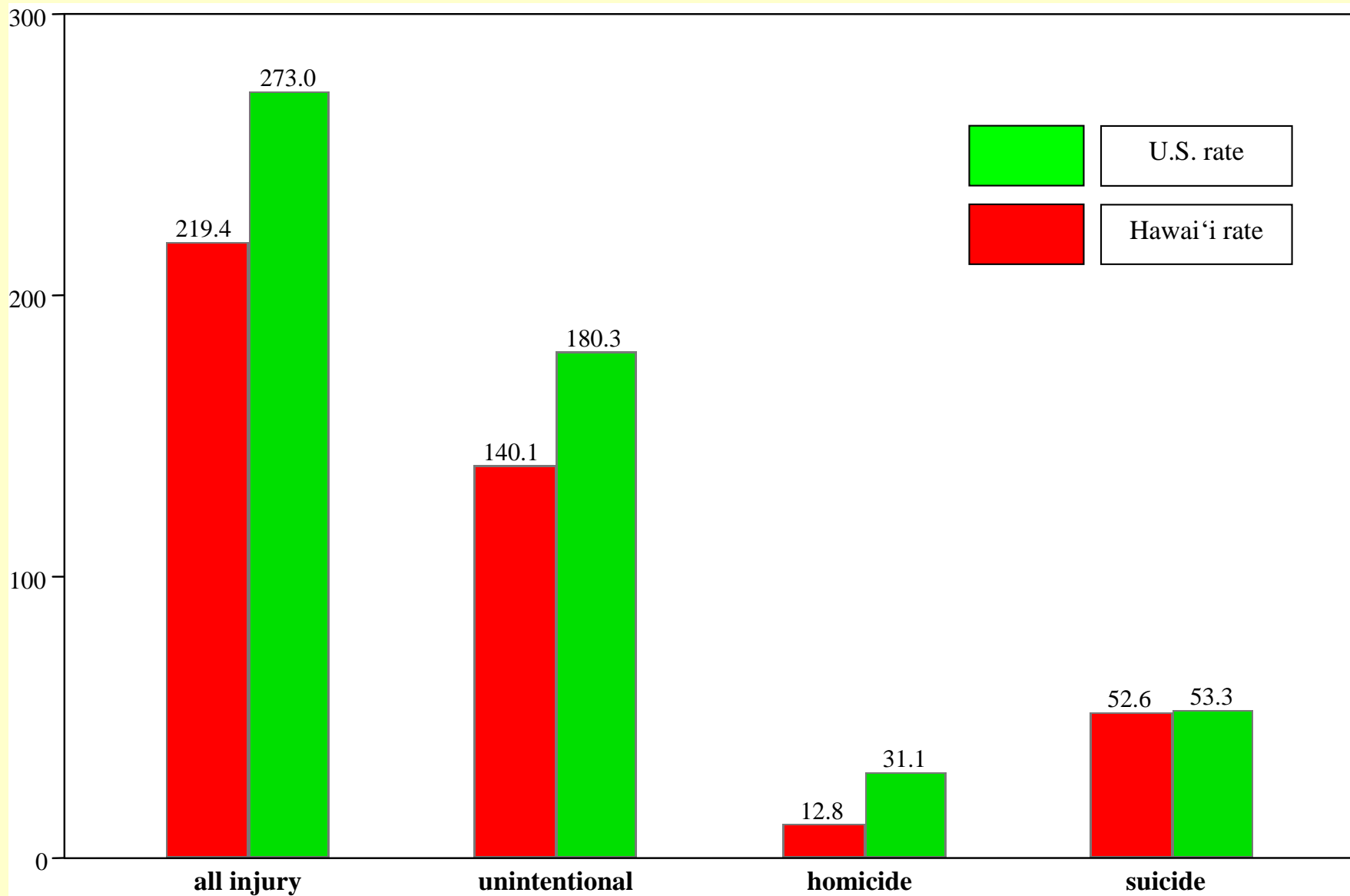
\*mvc = motor vehicle crash

# Leading causes of death among Hawaii residents, 2001-2005.

	Age groups							
	infants (565)	1-9 y (127)	10-19 y (245)	20-29 y (558)	30-39 y (881)	40-64 y (8,871)	65+ y (32,272)	total (43,521)
1	perinatal conditions 303	unintent. injuries 34	unintent. injuries 117	unintent. injuries 224	unintent. injuries 218	cancer 2,905	heart disease 9,482	heart disease 11,852
2	congenital anomalies 79	cancer 15	suicide 42	suicide 90	cancer 144	heart disease 2,165	cancer 7,060	cancer 10,199
3	unintent. injuries 26	congenital anomalies 10	cancer 23	cancer 52	heart disease 137	unintent. injuries 605	CVD 3,197	CVD 3,680
4	heart disease 14	homicide 9	heart disease 8	heart disease 40	suicide 94	CVD 438	CLRD* 1,208	unintent. injuries 1,951
5	septicemia 12	heart disease 6	congenital anomalies 7	homicide 22	CVD 35	suicide 278	influenza & pneumonia 1,040	CLRD* 1,407

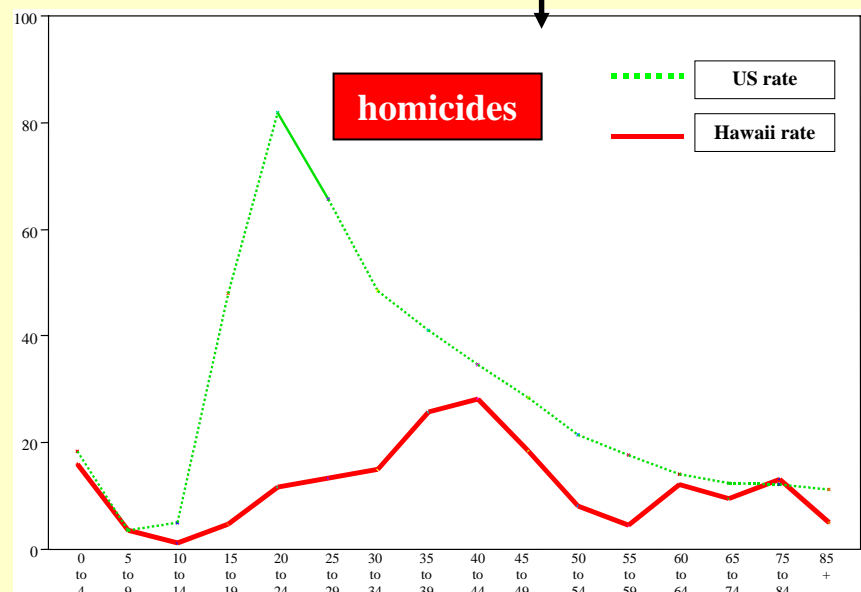
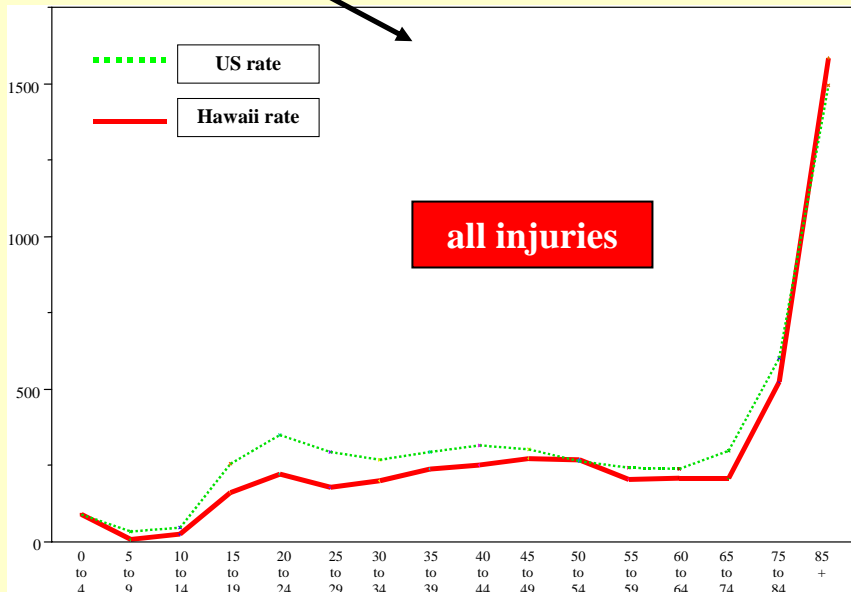
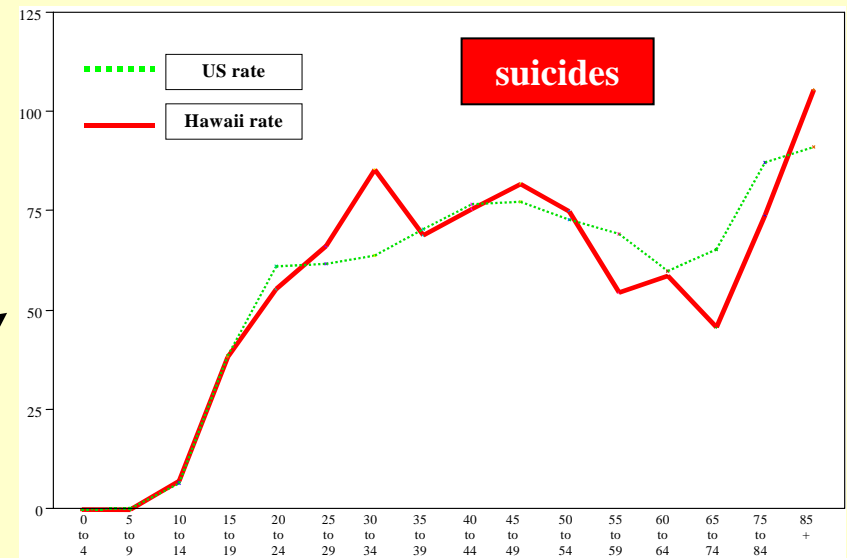
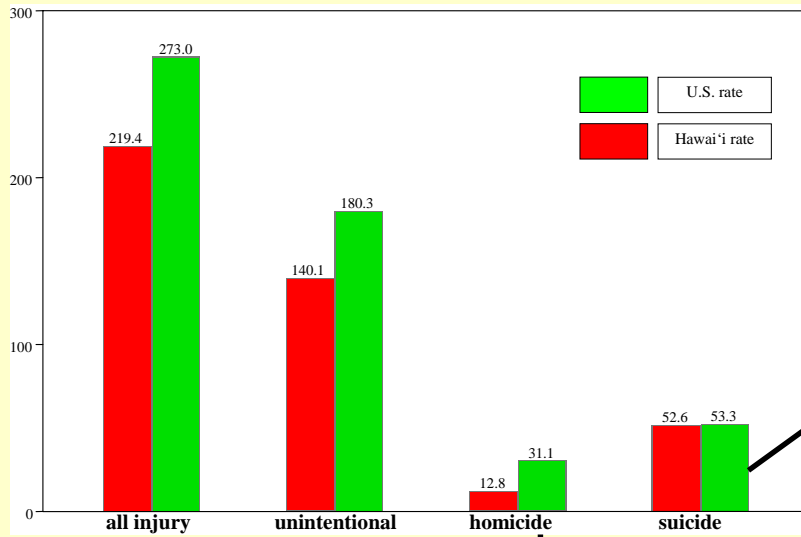
\*CLRD=chronic lower respiratory disease

## Fatal injury rates (/100,000): Hawaii vs. rest of U.S., 1999-2003.





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